Southern Cooperative Series Bulletin

August, 2004

SCSB 403
ISBN 1-58161-403-1

A Marketing Systems Approach to Removing Distribution Barriers Confronting Small-Volume Fruit and Vegetable Growers

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S-222 Regional Project

This bulletin was prepared by researchers in Georgia, Kentucky, North Carolina, and Tennessee who are associated with Regional Research Project S-222. It is being electronically published with the approval of the Directors of the Southern Agricultural Experiment Stations. Under the procedure of cooperative publications, it becomes, in effect, a separate publication for each of the cooperating stations listed.

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Funding for this project was received from the USDA/CSREES/IFAFS

Abstract

Part of the difficulty confronting rural areas and smaller farms is due to market access. Many agricultural producers are searching for alternative enterprises that would allow them to diversify their operations and increase their net returns. Growers with good entrepreneurial skills have established on-farm outlets or created niche markets with local independent wholesalers or retailers. Small-volume growers tend to have limited marketing personnel and post-harvest handling equipment, rely more on direct outlets, and sell to final retail consumers, whereas large-scale growers utilize volume-oriented outlets that encompass more involved and specialized marketing activities. Small-volume growers do not produce the volumes needed to enter the large-scale commercial marketing channel. Likewise, wholesalers, packers, and distributors do not see viable opportunities for working with small independent growers. Therefore, a simultaneity problem exists in which small growers have developed direct outlets for their production levels and see no opportunities for expansion, while market agents might work with smaller growers if there were locations where coordination of an adequate supply over an expended period could occur.

Different states have pursued different types of produce (fruits and vegetables) market development and have achieved different degrees of success. Two fundamental questions follow directly. Are these efforts crucial 1) to creating market alternatives for growers and 2) for creating job opportunities for the produce industry? Support from a USDA/CSREES/IFAFS grant provided an excellent opportunity to conduct a comparative produce market development study in four states, Georgia, Kentucky, North Carolina, and Tennessee, that are similar with respect to having a prevalence of small farms and substantial reliance on tobacco as a dependable cash crop. Produce production expansion in Kentucky and Tennessee has not kept pace with Georgia and North Carolina. Associated with this situation are apparent development differences in the creation and vitality of marketing channels. Kentucky and Tennessee have tended to rely on local initiatives, more independent site selection, and smaller volume outlet activities, such as retail-only farmers' markets or only assembly/packing operations at specific sites. Georgia and North Carolina have tended to develop highly coordinated marketing channels that include regional facilities with activities that range from farmers' markets to wholesaling and brokering at the same site. Information was gathered from five strategic industry groups in the four states in 2002 and 2003- growers, marketing firms, farmers' markets, Extension workers, and state departments of agriculture. This manuscript is a comprehensive report of survey sampling techniques used, survey instruments, and detailed results from this systems-approach to analysis of the produce industry in these four states.

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I. INTRODUCTION

A. Trends in Produce Marketing

The typical American has increased fruit and vegetable consumption significantly during the past two decades. Today, an average U.S. consumer eats in excess of 725 pounds of fresh and processed fruits, vegetables, potatoes, and melons annually (USDA, 2003 a,b). Domestic produce consumption is roughly 23 percent greater than it was in 1980. Vegetable, melon, and potato consumption, in fresh and processed forms, grew much more rapidly between 1980 and 2002 than did fruit consumption. Factors such as the expansion of grocery store salad bars; the introduction of fresh-cut and pre-cut vegetables; consumer acceptance of baby vegetables such as mini-carrots, hot peppers, and broccoli florets; and growth in the variety and type of vegetables stocked (e. g., multiple price lines of tomatoes, seeded and seedless watermelon, winter and summer squashes) contributed to an expansion in vegetable consumption nationwide (Estes and Smith, 1996).

Sustained growth in fresh fruit and vegetable consumption was unmatched by any other major food group over this time period (Cook, 2002). Consumers increased produce consumption for a variety of reasons, including dietary factors; a desire to eat healthier foods; a willingness to experiment with the variety, color, and mix of foods; rising income levels that allowed for greater variety and meal experimentation; and an increase in the availability of convenient, ready-to-eat foods such as fresh-cut vegetables, sliced melon, and trimmed sweet corn.

Supermarkets have doubled the number of items stocked in their produce departments and expanded the variety of items carried (Food Marketing Institute, 1998). Grocery store executives located produce departments near the front of stores because as fruit and vegetable sales increased, they realized that produce displays were colorful merchandising opportunities to promote freshness and also differentiate their store from competitors. The Food Marketing Institute (FMI) survey supported the critical role played by fresh produce in consumer store choice when a 1995 study reported that the primary reason that a consumer selected a particular store to shop at was based on the freshness and variety of its fresh market fruit and vegetable selection.

Increased produce sales, of course, contributed to regular increases in overall grocery sales, and they were prime contributors to improved chain-store profits. Produce departments account for a disproportionately greater share of profits and revenue relative to gross sales than any other grocery department, despite an increase in competitive market pressures exerted by supercenter formats (Cook, 2000). Kaufman, Handy, McLaughlin, Park, and Green (2000) indicate that in 1997 produce departments reported average profits of 17.2 percent, or nearly twice their shares of sales. As retailer sales volume increased, the number of grower, packer, wholesale , and retailer chain stores declined as all sectors consolidated into fewer but larger-volume firms. Thus, expanded consumption increased production and income opportunities for many new and existing growers and shippers, but income tended to vary considerably from year to year. Concurrently, innovative discount merchants such as Wal-Mart® and Target® expanded their everyday low-cost concept from general merchandise to include groceries and perishables, such as fresh produce. As a result, mass merchants emerged as serious challengers to traditional grocers for part of the food dollar. As perishable sales increased at discount stores, competitive market pressures forced grocers to adjust by reducing markup margins, re-examining their overall pricing strategy, and revisiting business relationships with suppliers, particularly with respect to how to stock, rotate, and reorder perishables (Estes, 2003a).

B. Supply Chain Sourcing and Sales Model

As Wal-Mart® and other discounters introduced new supply distribution efficiencies, grocers observed reduced sales volumes, lower profit margins, and decreased market shares in many areas where discounters opened stores (McLaughlin, et al.). Consumers were attracted to mass merchant outlets by lower prices and bulk quantity availability. As competitive market pressures continued, grocers explored new and innovative approaches to attract customers and maintain shopper loyalty by focusing on service activities. Improved service included expanded reliance on store label brands; offering rewards and discounts to frequent shoppers through establishment of loyalty programs; offering stamps, cleaners, banking) and fresh bakery foods; establishing self-serve check-out registers; and reconfiguring stores to include take-out home meal sections (fully cooked chickens, pre-made sandwiches, salad bars, etc.).

The service emphasis allowed grocers to focus on value-added offerings while diverting shopper attention away from any price advantages maintained by discounters and mass merchants. Thus, two competing sales approaches emerged: 1) traditional grocers' emphasized service and value-added concepts while adopting a 'competitive' pricing policy that featured advertised specials but discounts for frequent customers; and 2) mass market retailers who emphasized everyday low prices while featuring a spartan shopping experience, minimum convenience, and a basic selection of limited-choice items (Estes, 2003a). The high-service versus low-price approach worked well for each sector because customers self-selected outlets based on family grocery shopping needs and preferences. Segmented markets also allowed each sector to focus on growth in profits, volumes, and shares while they satisfied constituent customer bases. Of course, some customers shopped at both types of outlets because needs and preferences differed regularly.

With industry consolidation and concentration continuing throughout the 1990s, supercenter and membership clubs continued to make rapid and significant market expansion (Carman, Sexton, and Cook, 1997). All segments within the food distribution system reexamined supply chain partnerships. In effect, many retailers adopted one portion of the Wal-Mart® supply chain model by forging closer business relationships with their suppliers. As a result, electronic data interchange (EDI), efficient consumer response (ECR), and continuous replenishment programs (CRP) were introduced by many grocers.[1] Stores increased distribution efficiency and reduced transaction costs as suppliers co-managed inventory via electronic surveillance. Greater distributional efficiency expanded the number and types of outlets willing to sell perishable produce. Convenience stores, such as 7-11® stores, reintroduced fresh produce into higher-volume stores. Greater consumption resulted in increased plantings and sales for many fruit and vegetable growers, shippers, and handlers located in the main productions regions of California, Florida, and Texas.

As the industry changed, some broad-line food wholesalers decided to vertically integrate by acquiring retail chain stores. This acquisition strategy allowed wholesalers to maintain direct contact

[1] In its simplest form, Electronic Data Interchange (EDI) is the electronic exchange of information (usually standard business documents, such as purchase orders and customer invoices) between two businesses or trading partners in a specific predetermined format. Efficient Consumer Response (ECR) is a strategy in which the grocery retailer, distributor and supplier trading partners study methods to work closely together to eliminate excess costs from the grocery supply chain and better serve the consumer. Continuous Replenishment (CRP) is the practice of partnering between distribution channel members that changes the traditional replenishment process from distributor-generated purchase orders, based on economic order quantities, to the replenishment of products based on actual and forecasted product demand.

with consumers while it also provided a sales outlet for product. Economic reasoning suggests that as firm concentration increases, then one could expect an increase in both firm market power and observe an increase in industry profits. Industry consolidation accelerated during the mid-1990s, and McLaughlin, et al. (2000) noted that as retailers increased their average size and volume requirements, shippers faced additional pressure to increase the scale of their operation. At the very least, growers will experience a trend toward extended season length as buyers want to deal with high-quality suppliers. Martinez (2002) reported an increase in gross operating margin (an indirect measure of profit) from 14 percent in 1990 to 15 percent by 1997. The Food Marketing Institute (2000) reported that food retailers' income before taxes was 1.3 percent (as a percentage of sales) in 1992, but by 2002 income before taxes had doubled to about 2.6 percent (as a percentage of sales). Thus, indirect measures of industry consolidation supported the notion that efficiency increased but competitive market pressures declined as industry consolidation intensified.

Transaction volumes have increased and buyer and seller relationships continued to evolve and change. Retailers now expect wholesalers to co-manage inventory to minimize loss and waste as well as maximize sales revenue. In grocery stores, stocking and service fees (slotting fees) have been commonplace during the past decade, but these fees were less common in the produce sector. Slotting and service fees were introduced successfully to the produce sector by the fresh-cut and bagged salad market. Firms such as Dole® and Del Monte Fresh® supplied retailers with display cases and were willing to pay for shelf space in retail chains. As brand name use expands in produce, then slotting fees will become accepted practice. Buyers have explored other marketing options that could reduce price volatility and stabilize domestic supply availability. One outcome has been increased reliance on contracts between growers and buyers. While contracts are a relatively new phenomenon to produce, other sectors have relied on contract agreements. For example, fruit and vegetable processors have employed production and marketing contracts for a number of years to ensure timely supply availability, quality desired, and predictable prices. Wholesaler responses to questions seemed to suggest that contract usage would increase and the percentage of commodities bought under contract would expand during the next three years.

In the past, traditional wholesalers used marketing agents to buy items from grower-shippers, and then resold bought items to other wholesalers or retail grocers. However, as the number of independent retail chain stores has declined, then the number of wholesaler accounts also has dropped. In addition, some grocers elected to construct their own distribution facilities so they could receive product directly from the grower. This action eliminated the need for some specialty food wholesalers. Self-distributing retailers reduced handling costs per unit compared with the traditional specialty produce wholesalers. By 1999, 47 of the 50 largest food retailers were self-distributors (Martinez, 2002). Efficiency gains in the production and marketing system have resulted in abundant food available at affordable price levels. U.S. consumers now spend just 10 percent of their income on food purchases.

Calvin and Cook (2001) have noted that many grower-shippers became multi-regional and multi-commodity suppliers to maintain a year-round relationship (access) with buyers. Powers (1994) noted that between 35 percent and 55 percent of shippers' packed fresh vegetables were sold directly to wholesalers, while 20 percent to 40 percent were sold directly to retailers (page 6). Wholesalers have also expanded customer services to include tasks such as ripening, resizing, repacking, and co-management of inventory to better satisfy customers. As industry concentration and consolidation continued, new services and trends emerged. Consumer desire for convenience spurred expansion of fresh-cut items such as lettuce, celery, and broccoli florets. Food safety and pesticide residue concerns motivated some consumers to purchase organically grown fruits and vegetables, while

convenience concerns motivated other shoppers to seek out products with selected quality characteristics they desired, such as supersweet corn or fully ripe peaches.

While produce is still sold predominantly in bulk form, the need for reliable yet safe suppliers of fruits and vegetables has resulted in a greater reliance on prepackaged and fresh-cut foods such as salads. Local niche markets emerged for organically grown fruits and vegetables. New labeling requirements (country-of-origin, organic, PLU codes, etc.) motivated some companies to develop consumer brand names. In the past, brand name use was very limited because of the geographic diversity of supply locations, the need for year-round supplies, and consumer indifference toward produce names (such as Chiquita® bananas or Dole® pineapples). As traceback and safety continue to influence consumer choice, wholesalers have expanded their preferred attribute list to consider taste attributes such as ripeness and appearance in addition to handling attributes (firmness, variety, etc.). Other factors such as geographic origin and nutrition will be evaluated on a commodity-by-commodity basis.

Somewhat surprisingly, specialty crop and niche market produce growers also benefitted from increased consumer interest in fruits and vegetables, because many consumers experimented and bought new fruits and vegetables (*The Packer*, 2003). For example, in North Carolina, popular acceptance of 'Athena' variety cantaloupe encouraged local growers to experiment and plant 'sprite' melons, a new release of the North Carolina Specialty Crops research program. This melon is similar in shape to small cantaloupe but is smaller, with a tan outer skin, and clear flesh. Sprite melons were released as a new crop in 1999 and initial sales were very limited (Williams, 2000). However, for 2004 growers expect farm level sales for sprite melons to exceed $11 million, with nearly 425 acres planted (personal communication with Bill Jester, Extension Horticultural Specialist, North Carolina State University). In many cases, the new growers planting Sprite seeds are former flue-cured tobacco growers. Thus, some smaller-acreage, limited-volume growers capitalized on an expanding produce market opportunity. As other health-conscious consumers also increased fruit and vegetable consumption, the frequency of visits to local farmers' markets and pick-your-own outlets also increased, as did visits to specialty and niche grocery stores. Retail grocers, such as Whole Foods®, and grower organizations, such as Carolina Farm Stewardship Association, stressed the need for local consumers to support locally grown commodities through 'buying locally grown items, especially fresh fruits and vegetables" while encouraging all consumers to eat more fruits and vegetables. Therefore, one outcome was that large commercial producers located in Florida, Texas, and California benefitted. Equally important was that increased consumption was sufficient to benefit local growers (Estes, 1997).

As consumers expanded produce purchases, supermarket profits increased, which prompted the typical supermarket to expand the area, variety, and types of fresh produce over time. In 1980, the average supermarket offered about 200 items in its standard produce department, but by 2003 standard supermarkets offered 400 items that were rung up on the produce key (Harris, et al., 2002). As a result, many grocers use a mix of local and distant suppliers to source specific fruits and vegetables. For example, stores typically stock different tomato types ranging from locally grown, fully red greenhouse varieties to ripe cluster tomatoes imported from Israel and Holland. In addition, mature green, grape varieties, and Roma-style tomatoes are also available for shoppers year-round.

A mix of local, national, and international suppliers are used to ensure a continuous and regular supply of seasonally fresh, high-quality produce (Estes, 2003a). As availability and quality improved, commodity associations promoted the health benefits associated with increased fruit and vegetable consumption so expanded customer consumption was reinforced. Niche produce markets emerged that supported expanded consumption. The increased popularity of organically-grown fresh

fruits and vegetables and the adoption of a national definition for organically grown foods contributed to increased consumer satisfaction with produce quality, increased assurances about the safety of food consumed, and allowed many consumers to support local growers. Thus, many smaller-volume growers were able to participate meaningfully in the food marketing system because of buyer preferences for organically grown food and/or consumer desire to support local growers.

C. Trends in the Southeast

Expanded consumption and continued strong demand for fresh fruits and vegetables certainly benefitted fresh-market producers located in major production areas such as California, Texas and Florida. Typically, growers from these states dominate seasonal supply logistics. They provide about three-fourths of all domestically grown fruits and vegetables sold in U.S. supermarkets (Cook, 2000). These three states also receive and ship foreign-grown fruits (especially tropical) and vegetables. While California, Florida, and Texas clearly remain the dominant supply states for fruits and vegetables, the extreme perishability of most fruits and vegetables limits storage time and shelf-life, and creates seasonal niche market opportunities for many growers outside the main production regions. Thus, timing of harvest or a crop's market window niche is an important market-access consideration.

Nationally, shipments of fresh vegetables increased about 7 percent between 1997 and 2002, while consumption rose a more robust 8 percent (USDA, 2003b). Increased availability of imported vegetables because of NAFTA and other free trade agreements also contributed to greater consumer choice, as did renewed emphasis on, fresh-cut produce (Calvin and Cook, 2001). In the Southeastern United States, area growers expanded fruit and vegetable production differentially during the 1990s as per capita consumption of fruits and vegetables rose. For example, Ernst and Woods (2003) reported that Kentucky vegetable acreage increased approximately 6 percent per year between 1997 and 2002. In Georgia, vegetable plantings increased 7.5 percent, or at an average annual rate of 1.5 percent between 1997 and 2002 (USDA, 2004c). In North Carolina, annual vegetable plantings and output increased roughly 13 percent between 1997 and 2002 (Estes, 2003a). Despite expanded vegetable sales, fruit consumption remained mixed, as people ate more small berries but also reduced consumption of tree fruits. Nationally, small fruit and berry consumption rose about 7 percent between 1997 and 2002 as shoppers bought more strawberries, table grapes, and blueberries. In contrast, tree and stone fruit consumption declined 3 percent over the 1997-2002 period as shoppers bought fewer fresh-market apples and peaches (USDA, 2003a).

Despite generally positive consumption trends for most fruits and vegetables grown in the U.S., growers in some states were unable to expand fruit and vegetable output. For example, Tennessee growers planted fewer fruits and vegetables during the latter part of the 1990s, as vegetable plantings declined approximately 20 percent between 1997 and 2002 (USDA, 2004a). Historically, snap beans and tomatoes were important sources of income for many Tennessee horticultural producers, but in the late 1990s few Tennessee growers relied on snap beans and tomatoes as important sources of agricultural income. For example, between 1997 and 2002 Tennessee snap bean plantings declined about 17 percent during a period when other states increased theirs. Domestic snap bean consumption increased 10 percent and national plantings increased about 15 percent. Between 1997 and 2002, Tennessee growers also planted about 21 percent fewer tomatoes during a time when national plantings increased 12 percent and per capita consumption rose 7 percent.

For tree fruit growers, differences between Tennessee and national trends were less dramatic than snap beans or tomato trends, but production trends were still unfavorable for Tennessee

agriculture. U.S. apple- and peach-bearing acreage declined modestly about 6 percent between 1997 and 2002, while Tennessee apple and peach acreage declined approximately 30 percent, an amount five times the national rate of decline. Thus, these output comparisons suggest that the Tennessee fruit and vegetable growers likely struggled to remain competitive within the changing market environment. Dramatic output declines indicated that some Tennessee farms ceased operations as viable businesses.

For the past 50 years, the main source of farm income for many Southern growers was tobacco production and marketing quota ownership (Estes, 1997). During 2001, tobacco growers in North Carolina, Kentucky) and Tennessee ranked as the largest, second largest, and third largest tobacco production states, respectively, in the U.S. (all types of tobacco). Declining domestic cigarette consumption, rising tobacco imports, and the high cost of U.S.-grown tobacco have resulted in limited cigarette company purchases, reduced grower plantings, and declining producer profits. For Kentucky tobacco growers, few alternatives were explored prior to planting declines because about 40 percent of all crop income was obtained from tobacco (USDA, 2004b). Conversely, while North Carolina and Georgia growers also depended on tobacco income, less than 10 percent of North Carolina's cash receipts and about 6 percent of Georgia's income were obtained from tobacco production.

As growers and communities examined new sources of income, new marketing opportunities were created for both larger and smaller farm operators. Community farmers' markets and direct sales to consumers expanded so small farm operations had new market outlets. Thus, there was not a 'single' alternative enterprise but rather a wide range of alternative enterprises available to new and established growers, including conventional and/or organically grown fruits, vegetables, and specialty crops. The economic viability of the alternative enterprise depended primarily on the resources (land, labor, money, and skills) available to the producer. Although tobacco production has declined in economic importance, it has remained an important source of income for small-acreage growers (and rural communities) because the bulk of domestically grown tobacco (flue-cured and burley) originated from farms located in North Carolina, Kentucky, and Tennessee. In Georgia, tobacco production has declined as domestic cigarette consumption dropped, although Georgia farm cash receipts exceeded $100 million in 2002 (USDA, 2004c). Commercial broilers, cotton, peanuts, and vegetables exceed tobacco as an important source of Georgia farm income, but Georgia still produces about 65,000 pounds of unmanufactured tobacco each year, ranking fifth in the U.S. in total tobacco grown.

D. Produce Market Development

Market development is a complex process, dependent to a significant degree on simultaneous interactions between buyers and sellers. That is, markets become established and expand as growers provide adequate supply. But in order for growers to do so, they must have access to distribution channels that can accommodate the larger volumes. Part of the difficulty confronting rural areas and smaller growers relates directly to market access. Many agricultural producers are searching for alternative enterprises that may allow them to diversify their operations and increase their net returns. With adequate market development, fruit and vegetable production can enhance the viability of smaller growers and/or those who are considering transition from livestock, row crops, or tobacco.

Produce production can be instrumental in arresting the decline in the number of farms in rural areas, as well as an alternative to tobacco production. Successful transition depends to a large extent on market development. Previous efforts to overcome the simultaneity barriers have involved

the spectrum of outlets in the distribution system. Growers with good entrepreneurial skills have established on-farm outlets (e.g., stands, P-Y-O), or created niche markets with local independent wholesalers and retailers.

When market development takes place, farm income is enhanced. Job opportunities arise as new and expanded production and post-harvest handling activities occur. In some cases, development of these markets has evolved to include fruit and vegetable assembly/packing, fruit and vegetable wholesaling, and other food distribution (e.g., meat, dairy, dry groceries) activities. These expanded markets, called food distribution centers, provide small-volume growers with the opportunities to access commercial wholesale buyers, independent retailers, and food service operators within a single site. In most cases these are publicly supported markets that benefit from coordinated efforts among all the participants.

As the activity at food distribution outlets increases, opportunities for small growers expand. These growers can choose to continue with direct sales to retail customers (consumers). The presence of alternative buyers at the market also helps to guarantee buyers, and thereby, can encourage expanded production and sales through brokers or sales to wholesalers, processors, and food distributors.

Because of the seasonal nature of fruit and vegetable production, perishability of produce, and the shifting supply of regions, facilitating the roles of key participants is more involved and crucial than with other crops or livestock. Personnel from most states' Extension Services, Experiment Stations, and Departments of Agriculture have been involved in the marketing of vegetables. Research has focused on the costs and returns of packing and processing operations, market windows, and competitive positioning. Extension has provided educational programs and work on facilitating market development. Several types of support have been given by state Departments of Agriculture. Notably, several Southern states have provided coordinated development of marketing facilities and marketing activities. The extent of these states' involvement seems to be correlated with the growth of fruit and vegetable production. There appears to be a relation between the development of coordinated facilities in conjunction with a management system. Within these facilities there is access to alternative distribution outlets.

Marketing encompasses all the activities associated with moving and transforming agricultural products from the farm gate to final users. Produce has a variety of ways (channels) through which marketing occurs. Figure I-1 is a representation of typical linkages. Many studies dealing with various marketing linkages have been completed. In fact, all outlets and participants identified in Figure 1 have been the focus of one or more research projects in these four states (let alone other states). Numerous studies have addressed issues associated with direct marketing (e.g., Brooker and Taylor; Eastwood, Brooker, and Gray; Estes, 1985, Mizelle, 1989). Other studies, which are usually conducted in cooperation with USDA personnel, have examined the food wholesaling situation in metropolitan areas (e.g., Overheim, et. al., 1977, 1984; Taylor, et. al.). Some studies have dealt with the attitudes and preferences of consumers for locally grown produce (e.g., Brooker, Stout, Eastwood, and Orr , 1987; Eastwood, Orr, and Brooker, 1986; Estes, Herrera, and Bender, 1999; and Woods, 1997). Market window studies have been completed for many products (e.g., Best and Brooker; Estes, June 1985; Mizelle, 1988). Hannum, Coughenour, and Zilverberg examined vegetable markets and market development in Kentucky. Access problems associated with selling produce to in-state wholesalers was the focal point of a Southern Cooperative Research project (Brooker, Epperson, Law and Bateman; Brooker, Eastwood, and Brenchley). Vegetable packing and processing feasibility studies have been done (e.g., Ball, Brooker, Jenkins; Mizelle and Estes).

Figure I-1. Typical Grower to Outlet Linkages: Information and Product Flows

Growers Production	Smaller Volumes Increasing volume			Increasing volume	Larger Volumes
Marketing Personnel/ Structure	Individual Independent Sites		Extension Individual Independent Sites	Extension State Coordination Site Manager Public/Private Coordinated Sites	Extension State Coordination Site Manager Brokers Wholesalers Public/Private Coordinated Sites
Outlet Activity	Farmers' Market Direct Selling Private	Farmers' Market Direct Selling Public/Private	Farmers' Market Wholesalers Packing Public/Private	Wholesalers Packing Food Distributors Public/Private	Wholesalers Packers Processors Public/Private
Outlet Type	Direct Outlets	Smaller Retailers Wholesalers	Retailers Wholesalers	Retailers Wholesalers	Wholesalers
Outlet Size	Small volumes	Increasing volume		Increasing volume	Large Volumes

State direct marketing programs have been evaluated (e.g., Eastwood, Brooker, and Orr). However, these studies have tended to focus on vertical linkages from the farm to the respective outlet (Ricks, Boughton, Lyford, and Woods). While such analyses are beneficial, they have not addressed relationships across channels (Woods, 1995). The three rows between growers and outlet size represent key components of the marketing process. Progressing from small to larger levels of production and marketing activities is portrayed as moving to the right in the figure.

For example, the typical situation is that small-volume growers (upper left) market their produce as individuals, often through farmers' markets or their own direct outlets, which tend to be small in size. Large-volume growers, on the other hand, may ship their own produce and/or use brokers and wholesalers to market their production, which may go to a variety of outlets that require large volumes of product over extended periods (weeks).

Elements of the distribution system that pertain to small-volume growers are shown in green and those for larger-volume growers are tan. The color-coded horizontal lines represent the spectrum of small- to large-volume activity and the overlap in the transition from small to large outlet size. Small-volume growers tend to have limited marketing personnel and structure, rely more on direct outlets, and sell to consumers, while the larger-scale growers use more volume-oriented outlets encompassing more involved and specialized marketing activities. Small-volume growers have market access problems. They do not produce the volumes for sufficient time to enter the marketing channel as one moves to the right with respect to outlet activity. At the same time brokers, wholesalers, packers, processors, and distributors do not see viable opportunities in working with small, independent growers. Therefore, a simultaneity problem exists in which small growers have developed direct outlets for their production levels and see no opportunities for expansion, while market agents, if they work with smaller growers, have greater coordination problems to secure an adequate supply over an expended period (e.g., Brooker, Eastwood, and Brenchley).

Different states have pursued various types of produce market development and have achieved different degrees of success. Two questions are fundamental: are these relationships crucial 1) to creating market alternatives for growers and 2) for job opportunities for the produce industry? With respect to Figure I-1, notice the state coordinator and coordinated sites are red to emphasize that extant analyses and approaches have not evaluated these factors as catalysts in market development. An important point, implicit in the figure, is the interrelationships within the market channel. For example, the level of supply (growers' production) helps to determine the availability of marketing personnel, outlet activity, outlet type, and outlet size. At the same time, the volume of production is also dictated by market access.

An excellent opportunity to conduct a comparative produce market development study has been present in Georgia, Kentucky, North Carolina, and Tennessee due to the prevalence of small farms and the reliance on tobacco as a cash crop. All four states have comparable growing seasons. Each state has a large number of small-volume growers, but production in Kentucky and Tennessee has not kept pace with the other two states. North Carolina and Georgia have experienced the creation of marketing channels that are different from the two slower-growth states. That is, Georgia and North Carolina have state-owned facilities designed to help small-volume growers and are catalysts in the provision of core locations around which complementary marketing activities are operating. These differences have led to different levels of market channel development. Furthermore, the differences appear to have contributed to divergent experiences in sustaining small farms, market evolution, and job creation among the four states. Kentucky and Tennessee have tended to rely on local initiatives, more independent site selection, and smaller-volume outlet

activities, such as retail-only farmers' markets or only assembly/packing operations at specific sites. Georgia and North Carolina, on the other hand, have tended to develop more coordinated marketing channels, including regional facilities that range in activities from farmers' markets to wholesaling/brokering at the same site.

A comprehensive analysis of the evolution of these channels in each state was conducted. It drew upon the existing knowledge base. Because some of the extant literature was dated, and none had incorporated the relationships among sites, management, and regional and state coordination, there was a need to gather information from stakeholder groups in each state. More specifically, this entailed gathering relevant information via grower surveys in each state and interviews with four other key participants involved in produce marketing (described below) in the four states.

Extension Agents. Agents with horticultural responsibilities were interviewed. Information was collected about types of produce-related production and educational marketing programs were provided to growers. The amount of training and other programmatic support was included. Personal interviews were completed.

Grower Survey. Up-to-date information was needed and additional data were required regarding growers' current situations and their perceptions of the market opportunities for produce commodities. Surveyed growers were drawn from lists provided by the Extension participants. Mail and personal interviews were completed.

Marketing Firms Interviews. Fruit and vegetable marketing firms operating within the four-state region were interviewed. They included businesses operating at public and private sites, most of which were listed in the two credit rating books (*The Red Book* and *Blue Book*). Packing houses, wholesalers (independents and chains), processors (canned, frozen, or precut), and brokers/jobbers were among the respondents. Personal interviews were completed.

Market Manager Interviews. These interviews were composed of managers of public produce markets. These markets had been constructed by city, county, and state agencies. Interviews had three foci. One was the range of current produce marketing responsibilities and efforts. Another was the history of produce market development. Third was the extent to which coordination across outlets, facilities, and agencies occurs. Personal interviews were completed.

State Departments of Agriculture. Staff with marketing responsibilities were surveyed. Areas covered in these interviews included staffing, budgets, and types of produce marketing programs. Personal interviews were completed.

This report summarizes comparisons of the marketing channel infrastructures among four states with comparable growing conditions (e.g., climate, farms) but quite different market development experiences. The survey instruments are presented in Appendix A. Results of each of these surveys are presented in the following chapters. The respective questionnaire is described, and survey procedures are outlined. Results are compared across the four states for each survey. Implications for produce market development are given with special attention to the problem of simultaneity. The last chapter uses the results of the five surveys to identify the essential components of the produce marketing channel with the greatest impacts on the simultaneity problems that constrain market development.

II. EXTENSION PRODUCE ACTIVITIES IN THE FOUR-STATE REGION

The production and marketing-related information provided by Extension educational programs have direct impacts on the production of produce and on the development of linkages between growers and stakeholders farther down the marketing channel. Consequently, an assessment of produce-related Extension activities of two more successful states versus two less successful states provides some insight about Extension's role in market development. Such analysis is especially relevant because of Extension's aforementioned impacts on supply through dissemination of production-related information to growers and on demand through the provision of marketing-oriented information that encompasses post-harvest handling interactions among growers and other participants in the distribution system.

A. Questionnaire

The research team developed an Extension agent questionnaire that focused on the demand for and impacts of produce-related Extension educational programs (both production- and marketing-oriented), the amount of professional training in the areas of produce marketing, involvement with organic produce, participation in professional development (in-service) training and educational conferences, and the perceived need for additional support. Most of the questions were open-ended, due to the possibility of wide-ranging responses. There were two exceptions. One was a question that contained a list of specific activities for which agents were asked whether the demand was low, moderate, or high, and the other was a question about whether staffing for specialists and county agent horticultural assistance had been increasing or decreasing in recent years. A copy of the questionnaire is in Appendix A.

B. The Sample

County agents to be interviewed were identified in the following ways. For Kentucky, all of the horticultural agents were interviewed along with agents located in counties where vegetable cooperatives were located, which resulted in 19 interviews. In North Carolina, approximately 110 horticultural agents worked across the state. A subset was selected in order to obtain geographic dispersion in production areas and in produce commodities, resulting in 20 completed surveys. Tennessee agents in 12 major production counties were included in the state's survey. In Georgia, the sample frame included 14 agents. All of the interviews took place between May and November of 2002.

C. Staffing Levels

Respondents were asked if the staffing for specialist and county agent horticultural production assistance had been increasing or decreasing over the past five years. Kentucky respondents reported uneven growth in staffing, with nine of the respondents indicating staff increases in their regions of the state and one-third indicating that staffing levels had remained the same over the past five years. The number of North Carolina agents working in produce was five and ten times larger than in Kentucky or Tennessee, respectively. However, among those surveyed, 70 percent indicated that staffing levels had declined in North Carolina. Staffing for specialists and county agents providing horticultural production and marketing assistance has been decreasing in Tennessee, or at least staying the same in certain areas in the state. About half of the respondents from Georgia indicated that staffing levels had either stayed the same or increased, while the other half indicated that staffing levels had declined.

All four states have implemented comparable staffing strategies in that the respective Extension Service has placed horticultural agents in counties where there is enough production activity to justify the allocation. However, the divergence in the number and size of produce operations has resulted in quite different numbers of Extension agents with produce responsibilities. In Kentucky and Tennessee this has resulted in approximately 15 and 12 agents, respectively, for each state. North Carolina has horticultural agents in every county. Some of these are very urban in nature, while others have heavy concentrations of produce production. Horticulture agents in the urban counties tend to focus on homeowner-related problems. Altogether, the state has approximately 110 Extension agents who have commercial horticultural or urban responsibilities.

D. Demand for Information

A list of subject matter areas in which county agents provide produce information and assistance was given to all respondents. They were asked to characterize the level of requests they typically received as low, moderate, or high. Weighted averages for each service area were calculated by assigning numbers to the level of requests (1 = low, 2 = moderate, and 3 = high). The levels were multiplied by the respective relative frequencies of respondents and then added together to obtain overall scores.

Table II-1 presents the list of service areas, the weighted average levels of perceived demand for each state, the overall (four-state) average, and the rank ordering of each state's perceived service area demand level. The ordering of the service areas is in descending order of the overall weighted averages. The mix of production- and market-oriented perceived demand topics in the ordered list suggests that neither production nor market information requests dominated the requests for Extension information.

There is a fair amount of agreement among the states with respect to the relative positions of the service areas. Pest control was most frequently requested in all four states. Soil tests, market development, and variety recommendations comprised a group of information requests that had comparable overall scores after pest control. Irrigation and IPM practices were similarly rated (fifth and sixth) following the top four information types. Value-added information was in the middle of perceived demand, and post-harvest handling was eleventh. Information regarding no-till and organic production practices were the least requested overall. Growers may feel they are knowledgeable about these less frequently requested types of information, but they have a greater need for value-added and market development information.

The rankings of the service areas for each state are also shown in Table II-1. Rank correlations were calculated and are shown at the bottom. These results suggest that Georgia and North Carolina are very similar in their rankings, Kentucky and North Carolina are fairly similar in the rankings of Extension agents' perceived demand for information, and North Carolina and Tennessee are less so. Much of the discrepancy for Tennessee versus the other states stems from budgets/economics, which had a higher ranking in Tennessee. Kentucky and Tennessee tended to have similar ranks vis-a-vis North Carolina and Georgia for irrigation, best management practices, IPM, organic production, and post-harvest handling.

Table II-1. Demand for various types of produce information by produce growers: average perceived levels and rank by state.

	Weighted Average					Rank			
Service Area	**GA**	**NC**	**KY**	**TN**	**All**	**GA**	**NC**	**KY**	**TN**
Pest Control	2.93	2.65	2.53	2.92	2.70	1	1	1	1
Soils Testing	2.36	1.80	2.00	2.50	2.10	2	6	5	2
Variety Recommendations	2.36	2.20	1.84	2.08	2.04	3	3	7	3
Market Development	1.93	2.25	2.26	1.67	2.06	7	2	2	5
Irrigation	2.07	1.65	2.00	2.00	1.88	5	9	4	4
IPM	2.29	1.85	1.58	1.33	1.59	4	5	10	11
Value Added	1.93	1.75	1.90	1.50	1.72	8	7	6	9
Best Mgmt Practices	1.71	1.70	1.68	1.67	1.68	9	8	8	7
Budgets/Economics	2.00	1.45	1.53	1.58	1.52	6	13	11	8
Greenhouse	1.50	1.85	2.16	1.67	1.89	11	4	3	6
Post-Harvest Handling	1.57	1.50	1.37	1.17	1.35	10	12	12	13
Cooling	1.43	1.55	1.61	1.17	1.44	12	11	9	14
Organic Production	1.14	1.60	1.21	1.52	1.44	14	10	13	12
No-Till	1.21	1.10	1.16	1.33	1.20	13	14	14	10

Weighted average scores for each state calculated by assigning a "1" to ratings of "low level of requests," a "2" to ratings of "moderate level of requests", and a "3" to "high level of requests" then multiplying by the relative frequencies of responses in each category.

Spearman rank correlations:

$r_{KY,NC} = 0.811$, $r_{KY,TN} = 0.767$, and $r_{NC,TN} = 0.670$.
$r_{KY,GA} = 0.820$, $r_{GA,NC} = 0.938$, and $r_{GA,TN} = 0.732$.

E. Marketing Assistance Provided to Growers by County Agents

An open-ended question asked respondents to list marketing assistance programs they had provided to growers. In addition, they provided a brief description of the respective program. The information was used to group the programs into various types of assistance that are listed in Table II-2. No information was gathered about the amount of activity (e.g., budget, number of meetings, number of people attending) in order to minimize the length of the interview. Consequently, the table only shows whether the respective state had Extension programs reported by those sampled.

The agents surveyed in all states indicated they had offered programs in establishing or managing farmers' markets; pesticide certification; market pricing; assistance with co-ops or other grower associations; and meetings, short courses or conferences. North Carolina had assistance in all the areas listed, with Georgia providing all but one. Neither Kentucky nor Tennessee identified specific programs regarding agritourism, direct sales to schools and restaurants, or marketing weather-damaged produce.[2] Kentucky respondents had not provided information on packaging or vegetable field days. Tennessee respondents had not participated in educational tours of other production regions.

[2]However, since the date of the survey, Tennessee has implemented a statewide agritourisn initiative with combined programming from the State Department of Agriculture and UT Extension.

Table II-2. Types of marketing assistance that county agents indicated they had provided to growers.

Type of assistance	GA	NC	KY	TN
Farmers' market establishment/management	✓	✓	✓	✓
Information on packaging	✓	✓		✓
Educational programs on pesticide certification	✓	✓	✓	✓
Vegetable field days	✓	✓		✓
Educational tours of other production regions	✓	✓	✓	
Agritourism activities	✓	✓		
Direct sales to schools and restaurants	✓	✓		
Marketing weather-damaged produce		✓		
Assistance with co-ops & grower associations	✓	✓	✓	✓
Organic produce production and marketing	✓	✓	✓	✓
Information on market pricing	✓	✓	✓	✓
Meetings, short courses, or conferences	✓	✓	✓	✓

Recent interest in organic produce prompted a request for respondents to describe any programs they had for organic produce. Only three agents in Tennessee indicated that they had conducted any educational programming regarding organic methods of production, and only four in Kentucky had done so (usually in conjunction with a Master Gardener program). While only one agent in Georgia had assisted a client with organic production, one-third of the North Carolina responding agents had conducted field trials, seminars, educational field tours, or one-on-one consultations with clientele regarding organic production and marketing methods.

F. Professional Development Training

Several questions focused on development training for agents. One asked whether the respondent had obtained professional development training for produce marketing. If the answer was yes, the person was asked to provide a description. Table II-3 lists by state the various types of training programs that county agents have received.

In Tennessee, only one-third of the Extension agents indicated they had obtained professional development training outside of the annual in-service training and vegetable field day. Seminars was most commonly listed activity, albeit none of the responding agents indicated that he/she had attended any in recent years, with the exception of the annual statewide fruit and vegetable conference. Several in-service meetings held by plant scientists and agricultural economists were attended each year, but few agents attended regional or national conferences.

In Kentucky, in addition to produce marketing in-service training, all respondents indicated that they had received professional development in the form of attending the North American Direct Farmers Marketing Association and various seminars, workshops, and conferences. One-third of the respondents from Kentucky considered their "inside" involvement with cooperatives and marketing associations to be professional development.

Table II-3. Responses by county agents regarding the types of professional development they had experienced.

GA	NC	KY	TN
Annual in-service training	Annual in-service training	Annual in-service training	Annual in-service training
Produce-related seminars	_ _ _	Produce-related seminars	Produce-related seminars
Annual produce conference	Annual Vegetable Expo	Annual produce conference	Annual produce conference
Involvement with co-ops and marketing associations	_ _ _	Involvement with co-ops and grower associations	_ _ _
_ _ _	_ _ _	North American Direct Farmers Market Association conference	_ _ _
_ _ _	Visiting other successful production regions	_ _ _	_ _ _
Educational sessions at regional, statewide, and national conferences	Educational sessions at regional, statewide, and national conferences	_ _ _	_ _ _
Field days	_ _ _	_ _ _	Annual vegetable field day

In Georgia, agents reported they received in-service training on various topics and also received training through a winter school. Most agents participated in the Georgia Fruit and Vegetable Conference held each year, as well as various state and regional commodity-specific meetings, conferences, and tours.

Only one-half of the North Carolina Extension agents had obtained professional development training and those that did attended educational sessions at regional, statewide, and national produce meetings; visited other "successful" produce regions in the country; and worked closely with state specialists in program development. Most agents participated in that state's Vegetable Expo held each year, as well as commodity-specific meetings and conferences.

In terms of produce industry-oriented training programs designed for newly hired Extension agents, only North Carolina and Georgia had respondents who indicated that some training was available. These tended to be in counties with intensive vegetable production and agents determined their own training requirements based on the fruit and vegetable enterprises in the agents' county or area of coverage. Subsequent training was "top-down" driven, where the state-level specialists or agriculture program development coordinators determined the subject matter that was deemed most critical for agents to receive.

G. Support and Resources Needed for the Future

When asked about the types of support and resources that they would need in the future to be able to better meet the ever-increasing demands of clientele, marketing-related information (e.g., trends, outlets, prices, packaging, merchandising , and cooperatives) was most commonly mentioned by agents in all four states. Tennessee agents also indicated pest-related information, best management practices, labor laws and regulations, and up-to-date budgets as necessary for the future. Kentucky agents responded similarly, with the addition of organic-related information, on-farm demonstrations, and new production techniques. North Carolina and Georgia agents also indicated that they needed similar types of information as their Tennessee and Kentucky counterparts, but most responses centered on the need for increased travel and supply budgets, technicians and supplies for demonstrations, and legislative funding to develop processing plant infrastructure.

III. PRODUCE GROWERS IN THE FOUR-STATE REGION

Some background information about the produce growers in each state is provided in Table III-1. The data were drawn from the *1997 Census of Agriculture* (U. S. Department of Agriculture). Tennessee had the largest total acreage of farm land and crop land. Acreage for Georgia and North Carolina was very close together, somewhat less than Kentucky's, and considerably below Tennessee's. However, with respect to average farm size, Tennessee and Kentucky farms were comparable, smaller than North Carolina farms, and considerably smaller than Georgia's. The distributions of farms by size indicate that Tennessee had the highest concentration of operations with fewer than 180 acres, closely followed by North Carolina and Kentucky. Georgia had the largest share of farms greater than 500 acres, followed by North Carolina, then Kentucky, and Tennessee. Although Georgia had the largest average farm operation, North Carolina had the lowest percentage of farms with sales less than $50,000, and approximately 90 percent of Kentucky's and Tennessee's farms had sales less than $50,000.

Table III-1. Selected farm characteristics: 1997 Census of Agriculture.

Characteristic	GA	NC		KY	TN
Total farmland (million acres)	10.7	9.1		13.3	26.4
Cropland (million acres)	5.4	5.6		8.5	11.1
Average farm size (acres)	265	185		151	145
Distribution of farms by size (percent)					
1 - 179 acres	67.8	76.6		75.2	79.5
180 - 499 acres	19.6	15.2		18.9	15.5
500 - 999 acres	6.9	5.0		4.1	3.3
1,000 or more acres	5.7	3.2		2.8	1.7
Farms with sales less than $50,000 (percent)	77.5	73.9		87.3	92.1

Georgia and North Carolina rank among the top 10 U. S. states in income obtained from fruit and vegetable production. The USDA ranks Georgia as third in the United States in harvested fresh vegetable acreage and fifth in value (Wolfe, Fonsath, and Ferland, 2001). North Carolina ranks first in the United States in production of sweetpotatoes, flue-cured tobacco, and turkeys raised, while the state's growers are ranked among the leading five states in cucumbers for pickle production, bell peppers, strawberries, blueberries, and snap beans. In Georgia and North Carolina, harvested fruit and vegetable acreage usually exceeds 300,000 acres annually, with sweetpotatoes, watermelons, sweet corn, tomatoes, and sweet onions identified as important sources of horticultural income. In Kentucky and Tennessee, fruit and vegetable sales are relatively small sources of total farm income for most growers, and therefore, only limited information is available about horticultural growers. The Ernst and Woods (2003) survey indicated that, on average, about 10,000 acres of fruits and vegetables were grown in Kentucky annually. The Tennessee fruit and vegetable industry is somewhat larger than Kentucky's, but it is probable that Tennessee growers collectively farm fewer than 60,000 acres of fruits and vegetables each year.

A. Questionnaire

A 34-question grower survey was developed to obtain information about the behaviors of produce operations in the four states. Questions focused on decisions about what to plant,

post-harvest handling, current marketing activity, and anticipated changes in the produce industry. To enhance response rates, farmers who received surveys were provided with postage-paid return envelopes. Surveys were distributed in the spring and summer of 2002 and referred to the 2001 growing season. Some Georgia surveys were completed in the spring of 2003 to increase that state's sample size.

The survey that was used in Georgia, North Carolina, and Tennessee is included in Appendix A. Unfortunately, the Kentucky survey was distributed before the final version of the questionnaire was completed. Consequently, there are some differences in the statements and response categories.

The goal of the project dictated the types of information gathered. The data collected from the grower survey permitted chi-square tests of independence of response patterns by state. Descriptions of the distributions are presented, followed by inferences drawn from the tests. Emphasis is given to Kentucky and Tennessee versus Georgia and North Carolina. The states were not combined into two groups because interest centers on consistent patterns on a state-by-state basis and combining states could result in situations where within-group differences are lost.

B. The Sample

Georgia's grower sample was drawn from growers attending commodity meetings held throughout the state and from growers who had taken their produce to public markets operating in Georgia. Insufficient surveys were returned in 2002, so another survey using the same questionnaire was used the following year. The 2003 sample was generated by interviewing growers who were selling produce at various public farmers' markets throughout the state in the late spring and early summer of 2003.

The Kentucky sample was obtained from grower lists of the vegetable cooperatives in the state, county Extension offices, Kentucky Department of Agriculture fruit and vegetable producers, and Kentucky Farm Bureau-certified roadside markets. A total of 940 surveys were mailed, and reminder cards were sent two weeks later. Out of the surveys sent, 62 proved to be operations that did not involve fruit or vegetable production in 2001. Altogether, 385 useable questionnaires were returned, representing a 44 percent response rate.

The North Carolina sample was generated from several lists. Approximately 700 surveys were distributed. Of these, 400 were given out by Extension agents; and 100 each were sent to growers who attended the North Carolina Produce Expo, were members of the North Carolina Vegetable Growers Association, or were members of North Carolina commodity associations. No reminder cards were sent. There were 87 returned surveys, for a response rate of 12 percent.

The Tennessee survey was conducted in two ways. One was through personal interviews. County Extension agents, in addition to providing lists of growers, were also asked to suggest growers to be interviewed. This led to 22 personal interviews, plus nine additional interviews at county grower meetings. The remaining producers on the county lists received the questionnaire in the mail and were asked to complete and return the forms in the postage-paid envelopes provided. Altogether, 198 questionnaires were returned for a response rate of roughly 12 percent or nearly 11 percent among those who received the mail-out. No reminder cards were sent.

C. Produce Grower Sample Characteristics

Table III-2 presents summary information regarding some farm characteristics of grower respondents in the four states. The information suggests the samples are consistent with the *1997 Census of Agriculture* (U. S. Department of Agriculture). Chi square tests of independence are also shown. In all cases, the null hypothesis of independence of the responses by state is rejected at the 5 percent level of significance. With respect to age distribution, North Carolina and Tennessee had proportionately fewer operators under 30 years old compared to Georgia and Kentucky. Kentucky and Tennessee had relatively more operators over age 60. The percentages of operators between 41 and 60 were comparable across the states. Georgia and North Carolina were similar with respect to years of experience, having fewer operators than expected with less than three years of experience vis-a-vis Kentucky and Tennessee, which were higher than expected. Kentucky had fewer respondents than expected with at least 10 years of experience. North Carolina had the least involvement with livestock, Tennessee had the highest, and Georgia's and Kentucky's were similar and the lowest. Kentucky had the highest percentage of tobacco production respondents, and Georgia had the least. Georgia respondents were more likely to have had row crops as alternative enterprises, followed by North Carolina. Kentucky and Tennessee had comparable percentages of respondents in row crop production. Both the Kentucky and Tennessee samples had higher percentages of sample farms under five acres and fewer farms of at least 15 acres than Georgia and North Carolina, which is consistent with the distribution of farm size in Table III-1. Approximately three-quarters of the Georgia sample had farm incomes of at least $50,000. With respect to produce income, Georgia and North Carolina had higher proportions of sample growers who received $50,000 or more. These income distributions reflect the distributions of farm acres across the four states.

Table III-2. Sample characteristics of produce farms. Percentage distributions by state.

Characteristic		GA	NC	KY	TN	Chi square
Age distribution of operators:	Under 30	6.0	2.3	6.7	2.7	
	31 to 40	16.4	13.8	16.5	9.1	
	41 to 50	35.8	35.2	30.5	31.0	
	51 to 60	28.4	33.3	23.2	25.6	
	Over 60	13.4	18.4	22.9	31.6	22.60*
Years of experience of operators:	Under 3	4.8	4.7	24.8	11.4	
	3 to 6	16.4	20.7	23.5	13.6	
	7 to 10	11.9	10.3	14.2	13.0	
	Over 10	67.2	63.2	35.7	62.0	56.02
Other enterprises:	Livestock	35.8	16.1	37.0	42.6	18.66*
(Respondents could	Tobacco	20.9	25.3	43.7	24.7	29.06*
check more than one)	Row Crops	79.1	50.6	32.0	29.4	64.54*
Produce acreage:	Less than 5 acres	10.5	29.9	56.2	40.7	
	5 to 14.9 acres	13.3	19.5	7.6	25.4	
	15 acres or more	76.2	50.6	16.2	33.9	114.56*
Sales from farming:	Under $50,000	23.9	42.5	71.1	65.6	
	$50,000 or more	76.1	57.5	28.9	33.9	60.81*
Produce sales:	Under $50,000	55.2	56.3	92.2	75.7	
	$50,000 or more	44.8	43.7	7.8	24.3	85.40*

*Significant at .05 level. A chi-square probability of 0.05 or less is commonly interpreted as justification for rejecting the null hypothesis that the row variables/responses are unrelated (i.e., do not vary systematically) by the columns/states.

Table III-3 summarizes the results of questions that focused on production decision making. Statement numbers associated with the questionnaire in Appendix A are in parentheses with a Q prefix. The Response Category columns refers to the choices respondents had, and an "*" indicates a significant chi square. The null hypothesis for these tests is that response patterns do not vary systematically by state. The alternative hypothesis is that the response patterns do vary systematically by state. A significant chi square leads to rejection of the null hypothesis and acceptance of the alternative. The statistical procedure also generates expected frequencies of responses by state under the assumption of independence. Expected frequencies are compared to actual frequencies to identify instances where a state has large differences between actual and expected frequencies. In the tables that follow, only the actual frequencies are shown to minimize the complexity of the tables. The orderings of the response categories in the tables are based on the averages of the percentages (or averages in a few tables) across states indicating use of the respective factor.

Table III-3. Production decision-making questions: interstate comparisons.

Question	Response Categories
In 2001, did you contract the sale of any of your produce for the fresh market? (Q30)	Yes/no.*
How do you decide what produce to grow? (Q18)	Experience*, production expertise*, market access*, labor timing/availability*, risk*, price*, profit potential*, equipment needs.
When considering a new crop, how important is each of the following? (Q20)	Contracting*, broker/packer fees*, market location*, grading*, cooling*, volume requirements*, buyer-seller relationship*, transportation*, meeting buyer standards*, insurance*.
If you were to start the production of a new crop, what sources of information for growing the commodity would you use? (Q6)	Farm Bureau, another grower*, Extension, input supplier*, buyer, Internet, grower organization*, state department of agriculture*, farm service agency, no one.
Do you expect any changes in your operation in the next year related to the following? (Q17)	Use of irrigation*, change crops*, organic production, participation in a cooperative*.
Do you...? (Q10)	Attend trade shows*, participate in grower organizations*, try new varieties, receive market news publications, attend field days*, practice IPM*.

*Significant chi-square at the .05 level for the states versus response categories.

Kentucky had the highest percentage of growers who contracted for the sale of produce for the fresh market (30 percent) (Table III-4). Georgia had nearly the same proportion (28 percent), followed by Tennessee (20 percent) and North Carolina (14 percent). Although the inference of a significant response pattern across states is drawn, the pattern is not by Kentucky and Tennessee versus Georgia and North Carolina.

Table III-4: Percentage of the respondents by state who contracted for the sale of any produce for the fresh market (Q30).

GA	NC		KY	TN	Chi square
28	14		29	30	11.15*

*Significant at the .05 level.

One question (Table III-5) asked respondents to indicate which factors from a list of eight items they used in deciding which produce to grow. There were four instances where the proportions of Georgia and North Carolina respondents were greater than those of Kentucky and Tennessee (experience, production equipment, labor, and profit potential). Among the other four instances, Kentucky's response percentages were between Georgia and North Carolina, and Tennessee was the lowest for market access, risk, and price. Kentucky was the highest overall for equipment, although all four states had comparable percentages for this factor. With the exception of equipment, all the tests of independence were significant. These results suggest that growers in the more successful states tended to rely more on experience, production expertise, labor and profit potential in the their decision making about what to grow.

Table III-5: Percent of the respondents by state who used various factors to decide which produce to grow (Q18).

Factor	GA	NC		KY	TN	Chi square
Experience	79	80		67	73	8.34*
Market access	54	67		88	48	94.58*
Profit potential	58	73		54	54	16.61*
Price	45	61		57	37	22.31*
Production expertise	58	48		19	29	53.53*
Labor timing/availability	42	42		40	27	10.78*
Equipment needs	24	32		33	29	2.50
Risk	24	34		29	16	13.73*

*Significant at the .05 level.

Respondents were asked about the importance of various criteria when considering a new crop (Table III-6). A 5-point Likert scale from 1 (not important) to 5 (very important) was used. For each criterion state averages were calculated and then compared. Although the rankings of the average scores were similar across states, Georgia had the highest average score in every instance, and Tennessee always had the lowest. There were five occurrences of both Kentucky and Tennessee having lower averages than either Georgia or North Carolina (contracting, broker/packer fees, grading, cooling, and volume requirements). For the remaining five, Kentucky's averages were between Georgia's and North Carolina's. The distributions of the Likert scale ratings were also compared by state. All the chi-square tests were significant, leading to inferences that Georgia (Tennessee) growers typically considered these factors to be more (less) important in their decision making.

Table III-6: Importance of factors when considering a new crop: average score by state (Q20).

Factor	GA	NC		KY	TN	Chi Square**
Buyer-seller relationships	3.87	3.39		3.62	3.22	52.56*
Market location	3.73	3.36		3.63	3.08	43.62*
Meeting buyer standards	3.72	3.15		3.58	3.08	50.55*
Volume requirements	3.54	2.98		2.93	2.66	51.35*
Transportation	3.56	2.59		2.95	2.46	47.89*
Grading	3.39	2.77		2.77	2.37	78.72*
Cooling	3.13	2.89		2.76	2.32	67.57*
Contracting	3.07	2.29		2.27	2.08	52.16*
Broker/packer fees	3.25	2.33		2.17	1.79	74.99*
Insurance	2.84	2.02		2.08	1.95	50.56*

* Significant at the .05 level. ** The chi square tests are based on the distribution of responses, not the state averages.

Growers were asked whether they used any of 10 information sources about growing a new crop if they were to start the production (Table III-7). The proportions of the samples that used the respective source were compared across states. Another grower and Extension were the most frequently cited across the states, and Farm Bureau, no one, and farm service agency were the lowest. The distributions for each source by state were also analyzed. Four significant chi-squares were found (another grower, input supplier, grower organization, and state department of agriculture). However, no instance of a consistent pattern with respect to the two successful verus the two less successful states having actual frequencies that were above or below the expected frequencies occurred.

Table III-7: Sources of information used for the growing of a new crop. Percentage distributions of respondents who used the respective source (Q6).

Source	GA	NC		KY	TN	Chi Square
Extension	79	79		71	77	4.22
Another grower	48	78		78	60	34.75*
Buyer	43	47		41	32	7.61
Grower organization	33	31		35	18	17.61*
State Department of Agriculture	18	34		25	33	9.12*
Internet	16	24		25	27	3.04
Input supplier	28	16		20	12	11.17*
Farm service agency	12	10		11	13	.06
Farm Bureau	7	10		4	13	.60
No one	3	2		4	7	3.96

* Significant at the .05 level.

A list of four possible changes in production was included, and respondents indicated whether they felt each would increase (=3), stay the same(=2), or decrease (=1) in the following year(Table III-8). Kentucky averages were always slightly below two, suggesting the typical Kentucky grower expected little or slightly decreasing change. Averages for the other three states were always above two. Chi square tests led to inferences of responses varying systematically by state, with North Carolina's increase activity frequencies consistently greater than expected frequencies, and Kentucky's actual decrease frequencies greater than expected.

Table III-8: Do you expect a change in your operation in the next year related to the following? (Q17). Average scores by state.

Factor	GA	NC		KY	TN	Chi Square**
Irrigation	2.10	2.38		1.87	2.20	12.54*
Crops	2.09	2.21		1.92	2.12	22.00*
Organic production	2.06	2.07		1.95	2.07	12.54*
Participation in a cooperative	2.06	2.05		1.96	2.02	15.60*

* Significant at the .05 level. ** The chi square tests are based on the distribution of responses, not the state averages. Answers ranged from decrease (=1) to stay the same (=2) to increase (=3).

Six activities associated with staying up-to-date in terms of production were listed, and respondents indicated whether any applied to them (Table III-9). Either Kentucky or Tennessee had the lowest sample proportions engaged in each activity. There were three instances for which both Kentucky and Tennessee were lower (attend trade shows, participate in grower organizations, and receive market news publications). Analysis of the response patterns by activity indicated there were four instances where they varied systematically by state (attend trade shows, participate in grower organizations, attend field days, and practice IPM). In the cases of attend field days and participate in grower organizations, Georgia and North Carolina respondents were more likely than expected to attend, and Tennessee's less likely to do so. With respect to IPM, North Carolina actual frequencies were much larger than expected and Tennessee's much lower.

Table III-9: Production activities in which respondents participated. Percent of respondents by state who participated (Q10).

Factor	GA	NC		KY	TN	Chi Square
Try new varieties	66	80		74	74	4.36
Receive market news publications	61	63		50	52	7.05
Attend trade shows	67	67		46	41	25.70*
Participate in grower organizations	61	64		53	39	21.27*
Attend field days	45	60		57	42	14.04*
Practice IPM	40	59		40	32	17.96*

* Significant at the .05 level.

Several questions were directed toward post-harvest handling activities (see Table III-10). The purpose was to gather information about the extent of the use of various marketing strategies in the four states.

Table III-10. Post-harvest practices: interstate comparisons.

Question	Response Categories
If you considered the production of a new crop, who would you ask about marketing the commodity? (Q19)	Farm Bureau, another grower*, Extension, input supplier, buyer (broker/wholesaler)*, grower, co-op*, organization, state department of agriculture*, no one.
Are you a grower-shipper? (Q21)	Yes/no.
If you do not use a broker or wholesaler to sell any of your produce, which two of the following are the most important factors in your not using them? (Q23)	Volume requirements, fees*, packing, grading, precooling*, payment practices, broker availability.
Do you pack your produce yourself? (Q22)	Yes/no.
Please circle any of the following you use on the farm. (Q25)	Sorting tables*, sizers*, precoolers*, quick-cooling*, branding*, on-farm processing*, washing equipment*, boxes, PLU labels*, retail packing, holding coolers.
Do you pay someone else to .. (Q24)	Grade*, pack*, cool*, sell*.
If you only direct market, what do you feel are barriers to shifting completely to wholesaling? (Q12)	Lower price*, access to wholesalers, my volume too small, cooling requirements, grading and packing requirements*, time delay in payment*, fees charged by shipper/packer too high, high brokerage fees.
Do you expect any changes in your operation in the next year related to each of the following? (Q17)	Direct marketing*, on-farm cooling*, wholesale/broker marketing*, value-added processing*, branding*, traceback*.
Have you implemented any of the following? (Q29)	Product liability insurance*, PLU coding*, organic labeling, IPM*.
Do you believe traceback will impact your operation over the next few years? (Q28)	Yes/no*.

*Significant at the .05 level for the states versus response categories.

Sources of information about marketing a commodity were listed, and respondents were asked to indicate if they would use any for marketing a new commodity (Table III-11). Some notable differences were found. Georgia growers were less likely to ask another grower and more likely to ask a buyer versus the other three states. Kentucky growers were more likely to use a cooperative. The Farm Bureau, input suppliers, and “no one” were used the least in all four states. No consistent Georgia/North Carolina versus Kentucky/Tennessee results were found.

Table III-11: Sources of information about marketing another crop. Percentage of respondents by state who indicated they would use the respective source (Q19).

Source	GA	NC		KY	TN	Chi Square
Another grower	37	56		60	60	12.57*
Buyer (broker/wholesaler)	72	46		43	35	26.23*
Extension	48	46		44	52	3.13
Grower organization	28	22		23	19	3.05
State Department of Agriculture	10	25		17	25	8.72*
Cooperative	12	20		24	9	18.92
No one	6	7		8	12	3.70
Input supplier	10	8		7	7	1.04
Farm Bureau	3	4		2	6	5.30

* Significant at the .05 level.

A question asked if the person was a grower-shipper (Table III-12). Both Georgia and North Carolina had higher proportions of respondents indicating they were (42 percent and 41 percent, respectively) than Kentucky (32 percent) and Tennessee (35 percent), although the chi-square test of independence was not significant, leading to the inference that the proportions did not vary significantly by state.

Table III-12: Proportions of the samples who are grower-shippers by state (Q21).

GA	NC		KY	TN	Chi Square
42	41		32	35	4.19^{ns}

^{ns} not significant at the .05 level.

Those who were not grower-shippers were asked to indicate up to two factors in a list as reasons for them not using this market channel (Table III-13). Volume requirements and fees were the most frequently cited in all four states. Payment practices and broker availability comprised a second tier of reasons. Two of the factors had distributions that varied by state. Georgia growers were more likely to have checked fees, and North Carolina growers were more apt to have indicated precooling. An implication is that among those who were not grower-shippers, the reasons were similar across states or did not vary on the basis of the more/less successful state dichotomy.

There was no significant pattern in responses by state with respect to growers packing produce themselves (Table III-14). Between 70 and 75 percent in each state did their own packing. A follow-up question asked about the use of post-harvest handling equipment on the farm (Table III-15). Boxes and sorting tables were most frequently present. Precoolers, quick cooling, and branding were used the least. There were eight instances of responses varying by state (sorting tables, sizers, precoolers, quick cooling, branding, on-farm processing, washing equipment, and PLU coding). In these instances, Kentucky and Tennessee tended to use the equipment less than Georgia and North Carolina, except for on-farm processing where North Carolina did the least, and PLU coding where Kentucky did the most.

Table III-13: Two most important reasons for not using a broker or wholesaler (Q23). Percentage of respondents by state who checked each reason.

Reason	GA	NC		KY	TN	Chi Square
Volume requirements	45	63		57	64	4.80
Fees	66	33		45	35	11.68*
Payment practices	32	27		31	32	4.64
Broker availability	24	29		33	12	1.00
Precooling	3	29		17	22	8.60*
Grading	7	23		14	17	3.73
Packing	4	19		10	14	5.64

* Significant at the .05 level.

Table III-14: Growers who packed produce themselves (Q22). Percentage distribution by state.

GA	NC		KY	TN	Chi-Square
73	75		70	73	1.67^{ns}

^{ns} not significant at the .05 level.

Table III-15: Post-harvest handling equipment used on the farm (Q25). Percentage distribution of growers who used the equipment by state.

Equipment	GA	NC		KY	TN	Chi Square
Boxes	57	71		57	65	7.76
Sorting tables	51	41		29	37	13.91*
Washing equipment	43	38		25	30	12.26*
Holding coolers	27	36		27	25	6.64
Retail packing	21	31		22	26	4.68
Sizers	21	33		11	15	25.80*
On-farm processing	30	13		15	18	10.37*
Precoolers	22	17		10	9	11.31*
PLU labels	16	14		21	7	23.34*
Branding	12	16		3	5	25.70*
Quick-cooling	15	10		4	6	12.00*

* Significant at the .05 level.

Respondents indicated whether they paid someone else to grade, pack, cool, or sell their produce (Table III-16). In each instance Kentucky's respondents were more likely to have done so, especially the first three. The relative frequencies of the other three states were fairly similar. The result may be a reflection of the greater use of cooperatives in Kentucky.

Table III-16: Payment to someone else for post-harvest handling (Q24). Percentage distribution of growers who indicated such payments by state.

Activity	GA	NC		KY	TN	Chi Square
Cool	3	56		56	1	173.28*
Sell	24	34		34	19	13.83*
Pack	9	17		60	15	98.99*
Grade	9	20		56	12	92.60*

* Significant at the .05 level.

Perceived barriers to shifting to wholesaling were included (Table III-17). Unfortunately, the wording in the Kentucky survey did not match that for the other three states, so the analysis is restricted to Georgia, North Carolina, and Tennessee. For the three states, the number of respondents who completed the question were 29 for Georgia, 58 for North Carolina, and 138 for Tennessee, which comprise 43 percent, 67 percent, and 73 percent of the respective samples. In all instances Georgia respondents as a percentage of those who answered the question in the state were below those of North Carolina and Tennessee. There were four cases for which response patterns varied by state (lower price, cooling requirements, grading and packing requirements, and time delay in receiving payments, but the patterns of expected versus actual frequencies for North Carolina and Tennessee were mixed, so there was no consistent difference based on successful versus less successful states.

Table III-17: Perceived barriers to switching to wholesaling among growers who only direct marketed. Percentage indicating a barrier by state (Q12).

Barrier	GA	NC		KY	TN	Chi-Square
Lower price	41	71		na	49	9.59*
My volume too small	45	59		na	47	2.49
Access to wholesalers	31	48		na	49	3.28
Cooling requirements	21	41		na	46	6.16*
Grading and packing requirements	21	26		na	44	9.50*
Time delay in receiving payment	7	43		na	30	12.06*
High brokerage fees	24	26		na	20	0.80
Fees charged by shipper	24	17		na	17	0.90
Sample size	29	58		na	138	

* Significant at the .05 level.

Do you expect any change in your operation next year was a question that included six post-harvest handling activities (Table III-18). Georgia, North Carolina, and Tennessee responses were increase (=3), stay same (=2), and decrease (=1). Kentucky grower responses were yes (=1) and no (=0). Consequently, the increase and decrease responses for the three states were recoded to yes and stay the same to no. All the activities had significant response patterns by state. Kentucky respondents were always less likely to expect change. With respect to branding and traceback, Kentucky frequencies were lower than expected, and North Carolina frequencies were higher than expected. Changes in value-added actual frequencies for Georgia and North Carolina were greater than expected and that for Kentucky less. There were three instances for which Georgia and North Carolina actual frequencies were greater than expected, and Kentucky's and Tennessee's were lower (direct marketing, wholesaler/broker marketing, and value-added processing.

Table III-18: Expected post-harvest handling changes expected in their operations next year. Percentage who expected change by state (Q17).

Factor	GA	NC		KY	TN	Chi-Square
Direct marketing	28	38		14	29	30.95*
On-farm cooling	12	29		11	16	17.26*
Value-added processing	24	21		7	13	24.61*
Wholesale/broker marketing	9	17		7	19	21.26*
Branding	6	14		3	9	15.32*
Traceback	6	16		1	7	37.33*

* Significant at the .05 level.

Respondents were asked if they had implemented four specific practices (Table III-19). Liability insurance and IPM were the most likely to be in use across the four states and organic labeling the least. Product liability insurance and PLU coding were more likely to have been implemented in Georgia and North Carolina than Kentucky and Tennessee. IPM was least likely to be used in Tennessee.

Table III-19: Respondents by state who have implemented selected post-harvest handling activities. Percentages who have implemented by state (Q29).

Factor	GA	NC		KY	TN	Chi-Square
Product liability insurance	34	29		13	23	21.65*
IPM	19	28		25	11	20.75*
PLU coding	15	14		3	6	22.05*
Organic labeling	0	8		6	3	nc

* Significant at the .05 level. nc = not computed due to blank cells.

The last post-harvest handling statement asked if they believed traceback will impact their operations over the next few years, with a yes/no response (Table III-20). Both Georgia and North Carolina respondents were more likely than expected to indicate yes versus growers surveyed in Tennessee.

Table III-20: Percentages of respondents by state who felt traceback would impact their operations over the next few years (Q28).

GA	NC		KY	TN	Chi-Square
38	40		28	22	11.37*

* significant at the .05 level.

Growers were asked to estimate the percentages of their sales that went through various market outlets (Table III-21). Weighted average sales by state were calculated using the respondents' estimated percentage distributions of sales multiplied by the cell midpoint of the produce sales categories. Kentucky produce growers' use of cooperatives is shown by the much higher percentage of sales going through this outlet type. Georgia/North Carolina versus Kentucky/Tennessee comparisons reveal an interesting pattern and important finding. The two less successful states' growers tended to have had greater reliance on direct markets, whereas the former pair had sales centered in the commercial distribution system (direct to retailer, wholesale market, and shipper-packers).

Table III-21. Distribution of estimated produce sales by outlet by state (share of weighted produce sales)[a].

Outlet	GA	NC		KY	TN
Direct market	19.4	11.6		52.4	32.8
Direct to retailer	27.9	29.0		11.2	16.4
Wholesale market (noncooperative)	25.9	28.7		11.4	44.1
Direct to local restaurant	1.3	0.0		0.0	0.6
Processor	5.8	9.7		0.1	3.0
Community supported agriculture	6.6	0.8		1.4	0.4
Cooperative	1.4	2.7		20.8	2.4
Shipper, packer	11.6	17.4		0.4	0.2
Auctions	0.0	0.0		2.3	0.0

[a]Respondents' estimated percentage distribution of sales times the cell midpoint of the produce sales categories.

Table III-22 summarizes responses to statements about expansion of produce operations. Among the states, the percentages interested ranged from just under half in Georgia (49 percent) to 69 percent in North Carolina (Table III-23). The pattern varied by state but not consistently by Georgia/North Carolina versus Kentucky/Tennessee.

Table III-22. Expansion of produce operations.

Question	Response Categories
Are you interested in expanding your production? (Q5)	Yes/no.*
For each factor listed below, please indicate the extent to which you feel it is a factor that limits your ability to expand your produce operation (1 = not limiting, 5 = very limiting). (Q8)	Land, labor management, harvest labor availability, credit availability*, equipment*, insect control, price received*, market outlets*, weather*, irrigation, disease control*, transportation*, cooling*, labor housing*.

*Significant chi-square at .05 level for the states versus response categories.

Table III-23: Interest in expanding produce production (Q5). Percent interested by state.

GA	NC		KY	TN	Chi-Square
49	69		58	53	8.14*

* significant at the .05 level.

A list of 14 factors that could limit expansion was provided, and respondents were asked to indicate the extent to which they were limiting (1 = not to 5 = very). To test for independence, the range of responses was collapsed to 1 = limiting, 2 = neutral, and 3 = limiting. Average scores across the states are shown in Table III-24. The orderings of the average scores were similar across states. Prices received and market outlets, followed by labor management and harvest labor, were most limiting. Insect control, equipment, and transportation tended to be not limiting. There were eight instances of patterns varying by state (credit availability, equipment, prices received, market outlets, weather, transportation, cooling, and disease control). Price received was the only instance for which Georgia/North Carolina versus Kentucky/Tennessee varied systematically with the former pair tending to have actual greater than expected frequencies for limiting, and the latter pair have actual greater than expected frequencies for not limiting.

F. Implications

Several farm characteristics have been found that are common to Kentucky and Tennessee versus Georgia and North Carolina. Kentucky and Tennessee produce farms have smaller average size, and consequently, typically lower produce sales and farm income than those in Georgia and North Carolina. The former pair also has a higher concentration of older operators, but there is a tendency for growers in Kentucky and Tennessee to have relatively more operators with less than three years of experience. This may be a reflection of growers seeking alternatives to tobacco production.

When deciding which produce crops to grow, Georgia's and North Carolina's samples were more likely to have considered experience, production equipment, labor timing/availability, and profit potential. These could also reflect less experience being more prevalent in the Kentucky and Tennessee samples. Post-harvest factors associated with considering a new crop that were more likely to be part of Georgia's and North Carolina's decision making were contracting, broker/packer fees, grading, cooling, and volume requirements. This is consistent with them tending to have larger farms, more revenue, and as a result, greater awareness of the

importance of these factors in the commercial distribution system.

Table III-24: Extent to which factors limit the ability to expand produce operations (Q8).

Factor	GA	NC		KY	TN	Chi-Square**
Prices received	3.6	3.2		2.8	2.8	21.68*
Market outlets	3.0	3.3		2.9	2.9	12.79*
Harvest labor availability	3.1	2.6		2.8	3.0	7.35
Weather	3.0	2.6		2.3	2.5	26.26*
Labor management	2.8	2.3		2.4	2.4	11.76
Cooling	2.0	2.6		2.4	2.1	16.09*
Irrigation	2.2	2.3		2.1	2.2	11.65
Disease control	2.3	2.1		2.1	2.3	16.65*
Labor housing	2.0	2.4		2.0	2.2	5.91
Land	2.3	2.0		1.9	2.0	9.38
Insect control	1.8	2.0		1.9	2.1	4.89
Equipment	2.0	1.7		1.9	1.8	13.32*
Transportation	2.2	1.8		1.7	1.6	20.48*
Credit availability	2.2	1.8		1.5	1.5	44.58*

* Significant at the .05 level. **The chi-square tests are based on the distribution of responses, not the state averages. Average score by state where 1 = not limiting and 5 = very limiting.

Further evidence of a greater marketing focus in Georgia and North Carolina is the greater tendency to use post-harvest equipment. Sorting tables, sizers, precoolers, quick cooling, and branding involve higher costs that are more likely to be spread over larger volumes in these two states versus Kentucky and Tennessee. Georgia and North Carolina growers also are more likely to be engaged in wholesale/broker marketing and value-added activities.

IV. PRODUCE MARKETING AGENTS IN THE FOUR-STATE REGION

The interstate differences in produce market development depend, in part, on the presence of marketing agents. Consequently, an analysis of this component of the marketing channel in each state was undertaken. Of particular interest were similarities and differences in how fruits and vegetables were marketed by the larger firms located in either North Carolina or Georgia versus firms located in either Kentucky or Tennessee. While a number of different comparisons are possible, the focus of this section is on 'produce marketing agents' or wholesalers as defined by this study.

As demand for produce increases, then producers can capitalize on expanding demand only if they are able to satisfy buyer wants better than their competitors. As a result, in recent years wholesale buyers have attached increasing importance to a grower's ability to supply a variety of different commodities. If domestic supplies are short, then oftentimes imported supplies are plentiful and available to wholesalers. Thus, long-term economic viability depends on development of a long-run marketing plan and an ability to sell a crop at a price sufficient to cover total cost. Viability remains the greatest challenge for growers (Powers, 1994). The second greatest challenge is an ability to access a specific market outlet, which oftentimes is the wholesale market (Patterson and Richards, 2000). Marketing success is realized only after development and implementation of a carefully thought-out marketing plan. It was hypothesized that larger volume and scale producers who operated in North Carolina and Georgia would tend to have greater access to wholesale market outlets compared with the smaller volume, limited-scale growers located in rural Kentucky and Tennessee.

A. Questionnaire

The research team created a questionnaire to interview marketing agents in each state. Types of information included sources of locally purchased produce, outlets to which the produce was sold, and functions performed by an agent's company. The importance of selected requirements for buying local fresh produce, perceptions about growers, and the importance of selected trends in the produce industry were rated by respondents. Interviewees were asked to identify their three top problems in purchasing more local produce and their top three fruit and vegetable marketing opportunities over the next three years. A set of 12 questions designed to elicit an ordered preference ranking associated with advantages and disadvantages from the purchase of locally grown fruits and vegetables was developed. Appendix C contains a copy of the instrument.

B. The Sample

The survey was administered to a select sample of specialty wholesalers (marketing agents) who bought and sold fruits and vegetables in two or more states. In 2003, Georgia and North Carolina investigators surveyed specialty wholesalers operating on one of the state-operated farmers' markets. During late 2001 and 2002, Kentucky and Tennessee researchers conducted personal interviews with a selected number of wholesalers.

Within the four-state area, we interviewed representatives from "marketing agent" firms. They were defined as that subset of wholesalers who conducted the bulk of their transactions in the four-state area and were in business primarily to buy and resell fruits, vegetables, and melons. Prior to contacting each firm, we attempted to develop basic business information about each wholesale enterprise using standard secondary sources and inquired if

the firm defined its service area as primarily within the four-state region. Using this specific definition of 'marketing agent,' we identified a set of wholesalers to interview. In some cases, the wholesale firm bought and resold one or just a few commodities, such as tomatoes or sweetpotatoes. Of particular note was our exclusion of general-line grocery wholesalers who buy and sell a number of commodities. Also, we limited the number of interviews with full-line foodservice wholesalers in North Carolina, Kentucky, and Georgia. Tennessee did not limit the number of full-line foodservice and institutional suppliers. Because of the difficulty in contacting and meeting with brokers, we did not include brokers as 'marketing agents.'

Cook (2000) reported that a total of 1,079 chain, grocery and wholesaler firms operated in the United States, and there were fewer than 200 firms that could be classified as 'specialized' produce wholesalers. In Georgia and North Carolina, produce wholesalers often located on or near a state-operated farmers' market facility. Since the states of Tennessee and Kentucky did not operate farmers' markets, investigators did not have this convenient option available to them. Instead, Tennessee and Kentucky investigators used secondary sources to identify firms and relied on phone calls and personal visits to secure survey data.

Relatively little information has been published concerning the wholesale produce industry within the four-state region, particularly with respect to fruit and vegetable marketing activities in Kentucky or Tennessee. Target wholesale firms were identified using several methods, including personal knowledge of area firms; information contained in credit rating books (such as *The Red Book (www.rbcs.com)* published by Vance Publishing, Lexana, KS and *The Blue Book (www.bluebookproco.com)* published by The Produce Reporter Company, Carol Stsream, IL); perusal of agribusiness lists provided by states' departments of agriculture; fruit and vegetable educational meeting attendees; and names furnished by Cooperative Extension Service agricultural agents. For analysis purposes, this report assumes that marketing agent and produce wholesaler (as defined) are interchangeable and equivalent terms.

Despite a limited number of wholesale firms based in Tennessee, 35 different wholesale produce firms' marketing agents were interviewed. In Kentucky, investigators were able to interview 10 produce wholesalers located in the state. Most Tennessee and Kentucky wholesaler interviews were conducted during the spring and summer of 2002. Tennessee wholesaler responses indicated that among the firms interviewed many serviced institutional market suppliers and affiliated retail grocery chains. In Tennessee, relatively few of the interviewed wholesalers served either independent grocers or resold product to other wholesalers.

The state of North Carolina operates five regional farmers' market facilities, and all markets have wholesale tenants located at the market. In North Carolina, 19 wholesale firms were interviewed during 2003 and early 2004. Cooperators were identified primarily through inspection of farmers' market tenant lists supplied by farmers' market managers. In Georgia, nine wholesale produce firms were interviewed during 2003. Georgia wholesale cooperators had offices located at the Atlanta State Farmers' Market and were willing to answer survey questions. Georgia, Kentucky, and North Carolina wholesalers indicated that their primary clientele included other wholesale distributors as well as affiliated retail grocers. Thus, this clientele mix for these three states differed from the mix of wholesalers interviewed by University of Tennessee investigators who interviewed independent grocers and institutional jobbers.

C. Interstate Comparisons

Marketing agents most often obtained fresh fruits and vegetables from a mix of in-season dealers, but about three-fourths of all respondents (all states) reported that they bought directly from growers when items were available locally. Survey findings indicated that nine of ten Kentucky cooperators had bought produce directly from growers, while most of Tennessee's respondents (25 of 35) did buy some produce items directly from growers. North Carolina and Georgia respondents reported similar values in that 15 of 19 (79 percent) North Carolina cooperators and seven of nine (78 percent) of the Georgia respondents had purchased produce directly from growers. Respondents were asked to identify important factors in the purchase decision (Table IV-1).

Table IV-1. Average ranking of factors identified by wholesalers, by state, as important or unimportant when they purchase fruits and vegetables direct from growers (using a 5-point Likert scale labeled as 1=not important to 5=very important).

Factor	GA	NC	KY	TN
Duration	4.1	4.2	4.2	3.9
Traceback	3.7	4.0	3.9	3.7
Third-party certify	2.9	3.7	4.1	3.5
Contracting	2.5	3.2	3.0	3.1
Brand label	4.0	2.7	3.4	2.6
Support mechanism	2.7	2.9	3.1	2.6
PLU coding	2.8	2.5	2.5	2.5
Genetic modification	2.3	2.3	1.9	2.0
EDI compatible	2.0	2.0	2.6	2.3
Number of respondents	9	18	10	35

Results suggest that many factors affected the wholesaler-grower relationship. In general, wholesalers indicated that the length of time that a supplier could provide an item (duration), the supplier's ability or willingness to track an item from the field through the marketing chain, and the seller's willingness to offer independent (third-party) food safety certification were the most important factors that they considered when they bought produce from a grower-shipper. Duration of seasonal supply, traceback, and third-party certification were identified as the top characteristics that wholesalers located in North Carolina, Kentucky, and Tennessee sought, while Georgia wholesalers indicated brand label name (e.g., Vidalia onions) was important.

There was also consensus among wholesalers (in all states) concerning what was relatively less important. For example, wholesalers indicated that electronic data interchange (EDI), or retail linkages, compatibility and genetic modifications were less important to most wholesale buyers. EDI service compatibility was ranked lower than it might have been just a few years ago because of widespread use of Web-based inventory management and reordering systems. Many customers insist that vendors and suppliers co-manage inventory levels, reorder

any items electronically, and expand their e-commerce capabilities. Collectively, these activities have diminished the need for EDI capability.

Wholesalers also indicated greater acceptance of shipper and consumer private label brands for produce. Recognizable brand names was included in the list to allow for concerns about food safety and pesticide residues. To some extent, then, the expansion in brand name use in produce was driven by industry consolidation, attempts to build customer loyalty for a product, a desire to obfuscate shopper price comparisons, and seek a broader distribution network for the wholesaler. Branding was also a service provided to convey quality and to eliminate (at least temporarily) customer concerns about the long-term risks associated with food safety or genetically modified foods. It would also appear that suppliers attaching price-look up (PLU) stickers to each item, while important, were less critical than duration of supply, traceback ability, or third-party certification of the safety of an item.

The small number of interviews and differences among the types of agents interviewed obviated statistical tests of independence by state. However, examination of the distributions of responses by factor suggested similar patterns for supply duration, support mechanism, PLU coding, genetic modification, and EDI compatible. Tennessee had higher concentrations of market agents who felt traceback, third-party certification, brand label, and support mechanism were not important.

Wholesalers were consistent across states concerning their views about fruit and vegetable farmers that they dealt with in sourcing produce (Table IV-2). In general, wholesalers thought that local growers wanted to sell in bulk and provided inconsistent grades and variable quality (sometimes good, sometimes bad). As a result, local growers were offered lower prices for the prevailing market quality. Also, respondents felt that many growers did not conduct market research so they were often unaware of what the ‘fair’ market prices were for items. Finally, wholesalers also believed that most growers were unaware of the exact grade, quality, and varieties of items that most buyers wanted. Thus, overall quality and grade considerations seemed critically important to wholesalers as to whether or not they bought from a grower and much more important than volume or quantity-related factors.

No statistical tests were undertaken; however, comparisons of the response patterns by state suggested the following: Tennessee agents tended to give strong (1 or 5) agreement or disagreement vis-a-vis the other states for the purchase criteria. However, this result could be due to the mix of wholesalers interviewed.

Wholesalers were asked to express views about how important or unimportant they thought five specific areas would be during the next few years. Average responses by state are listed in Table IV-3. In general, most wholesalers thought that third-party certification, traceback, contracting) and branding would remain extremely important issues as they bought fruits and vegetables from grower-shippers. While some wholesalers also thought that organically grown fruits and vegetables would remain an important niche market for selected specialty crop growers, most wholesalers thought that organic fruit and vegetable production would become relatively less important than it is today, at least compared to the other issues, so it was ranked least important among the five topics. There was general agreement among wholesalers located in North Carolina, Georgia, and Kentucky that third-party certification, traceback, and contracting were important issues, and they would remain important issues during the next few years. Tennessee wholesalers were of a similar view but thought that organics, branding, and contracting would be similar in magnitude of importance to Tennessee fruit and

Table IV-2. Average value expressed by surveyed wholesalers, by state, as to whether or not they believed that local fruit and vegetable farmers satisfied adequately wholesaler purchase criterion, by state.

Purchase Criteria	GA	NC		KY	TN
Consistency	3.5	3.4		3.2	3.4
Met quality	2.9	2.9		2.9	2.7
Grew what buyer wanted	2.9	2.1		1.8	2.1
Volume	3.1	2.9		2.5	3.0
Sell to wholesalers	2.8	2.8		3.0	2.0
Accepts fair prices	3.1	3.4		2.7	2.2
Understands market conditions	2.8	3.1		3.3	2.7
Number of respondents	9	18		10	35

Respondents used a 5-point Likert response scale labeled as 1=strongly agree; 5=strongly disagree.

vegetable growers. North Carolina, Tennessee, and Georgia wholesalers indicated that traceback was the single most important issue to them (highest rank) as they bought fruits and vegetables from local grower-shippers, while Kentucky wholesalers identified third-party certification as just slightly more important than traceback. Wholesalers in all four states indicated that organics consumption and production were the least important to them among the five topics that they were asked to rank. Branding was ranked above organics but much lower than traceback, third-party certification, or contracting. Although there were too few interviews to allow statistical tests of independence, inspection of the frequencies of responses indicated the Tennessee marketing agents had relatively more instances of “not important” than the other three states, which is reflected in the lower average scores.

Table IV-3. Average value expressed by surveyed wholesalers, by state, by state, concerning the importance of each topic to their purchase decision during the next few years.

Topic	GA	NC		KY	TN
Third-party certification	4.3	4.7		4.2	3.4
Traceback	4.7	4.8		4.1	4.1
Contracting	4.2	4.2		3.8	2.8
Branding	4.3	4.2		3.9	2.9
Organics	3.3	3.1		3.4	2.8
Number of respondents	9	18		10	35

Respondents used a five-point Likert response scale labeled as 1=strongly agree; 5=strongly disagree.

Market agents were asked to list the three most important problems they encountered when they bought fruits and vegetables from local growers. Because there was no request to prioritize entries, no significance was given to the ordering of responses. Key words were used to group similar responses. Table IV-4 lists the 16 problem areas.

Wholesalers in North Carolina, Georgia, and Tennessee tended to believe that inconsistency in quality and/or poor pack quality were the biggest problems encountered, while Kentucky wholesalers stressed volume-related issues (insufficient load size) as the biggest problem. Although an expectation was that wholesalers located in Georgia and North Carolina would identify similar problems in dealing with local growers vis-a-vis the Tennessee and Kentucky wholesalers, in many cases there was little distinction among the listings given by Georgia and North Carolina versus Tennessee and Kentucky wholesalers. For example, short shelf-life/inadequate precooling was noted as a problem by about 9 percent of the North Carolina wholesalers (fourth most frequently mentioned). Similarly, a number of Tennessee wholesalers identified precooling as a problem area (second most frequently mentioned problem).

Table IV-4. Top problems reported by wholesalers, by state, when they bought fruits and vegetables from local growers, the number of respondents who mentioned the problem, and the proportion (%) who mentioned the problem relative to the total number of problems identified by wholesalers in the state.

Topic	GA	NC		KY	TN
Inconsistency in quality over season	4(24)	7(16)		2(10)	12(16)
Year-round (or extended) reliability	0(0)	2(5)		2(10)	9(12)
Overall poor quality of packs	3(18)	8(19)		1(5)	8(11)
Insufficient volume availability when needed	2(12)	7(16)		5(30)	7(9)
Unfamiliarity with grower or brand name	1(6)	3(7)		3(15)	2(3)
Poor or inadequate packaging	3(18)	1(2)		3(15)	7(9)
No local contacts - wholesalers were unable to locate an area grower easily	2(12)	2(5)		0	4(5)
Growers do not know grading specifications	1(6)	1(2)		1(5)	4(5)
Labeling/markings/PLU inadequate	1(6)	1(2)		1(5)	3(4)
Must arrange pick-up transportation	0	2(5)		0	3(4)
Short shelf-life/inadequate precooling	0	4(9)		0	10(14)
Growers do not know market conditions	0	3(7)		0	4(5)
Just inconvenient to buy locally	0	2(5)		2(10)	1(1)
Market conditions (oversupply)	1(6)	2(5)		1(5)	1(1)
Maximum total responses	28	57		30	105
No specific problem noted or offered	10	12		9	30
Number of problems cited	18	45		21	75

Failure to precool was not mentioned as a problem at all by a Georgia or Kentucky wholesaler. Of course, without additional information, several alternative explanations seem plausible concerning why precooling was not a problem in two states with different market development experiences. First, the explanation could be connected to wholesaler expectations when dealing with local grower-shippers. Perhaps Kentucky wholesalers knew that most growers had limited volume so they could not afford to precool loads and did not expect it. As a result, the grower's failure to precool was expected. Second, precooling could be so prevalent in an area that it is not a problem. For example, Georgia grower-shippers tend to be larger volume grower-shippers and may have sufficient resources available to precool loads. Since loads were often precooled, it was not seen as a 'problem.' Thus, it could be for very different reasons that precooling was not identified as a problem for Kentucky or Georgia, while it was a problem for North Carolina and Tennessee wholesalers. Without additional information, it remains unclear as to why precooling (and other areas) were important problems to selected wholesalers in one state while other wholesalers did not seem to think it was a problem.

After wholesalers were asked to identify problems buying produce from local growers, respondents were asked for their views about the marketing potential of fruits and vegetables. Most expressed very positive attitudes about future demand for fruits and vegetables. Market agents identified both vegetables and fruits (excluding tropical and citrus fruit) that they expected would experience increased market opportunities over the next three years. Respondents were then asked to identify vegetables and fruits (excluding tropical and citrus) that they thought had limited or declining marketing potential over the next few years.

Wholesaler responses to increases and decreases in fruit and vegetable market potential are contained in four tables (Tables IV-5, 6, 7, and 8). Specifically, Table IV-5 lists all vegetables that wholesalers expected to have increased market potential over the next few years, and Table IV-6 lists all vegetables that wholesalers thought had limited or declining marketing potential. Table IV-7 focuses on fruits that wholesalers expect to increase in plantings and consumption, while Table IV-8 identifies fruits that wholesalers thought were oversupplied and thus had limited near-term marketing potential. If respondents were unwilling or unable to mention a fruit or vegetable, then it was reported as a 'no response.' Wholesalers were able to list as many specific commodities as they desired. For fruit, tropical and citrus fruits, if mentioned by a wholesaler, were excluded from findings.

Most wholesalers thought that fresh market tomatoes would continue to increase during the next few years (Table IV-5). Wholesalers indicated that many types of tomatoes sold by grocers ranging from sweet grape tomatoes to imported, stem-attached, vine-ripe tomatoes to the winter-season, Florida-grown, mature green tomatoes presented opportunities. Some wholesalers thought that the demand for grape tomatoes would continue to increase, but only by substituting grape tomatoes for greenhouse and cherry tomatoes. In Tennessee, a number of wholesalers believed that fresh-cut vegetables would continue to expand, but enthusiasm was more limited by wholesalers located in other states. Most wholesalers who thought that fresh-cut would continue to expand did not indicate a specific commodity that would benefit, such as chopped or leaf lettuce and shredded cabbage.

Interestingly, only two vegetables were identified by at least one wholesaler in every state as an item that they expected to increase during the next few years: bell peppers and fresh-ut vegetables. Together, North Carolina and Georgia growers plant in excess of 10,000 acres of peppers annually, while Kentucky and Tennessee growers combined usually plant fewer than

1,000 acres of bell peppers. Wholesalers did suggest that additional market potential existed for bell pepper, because sweet pepper per capita consumption has increased over the past decade.

Table IV-5. Vegetables that wholesalers expected to increase in marketing opportunities during the next three years, by state, number of times mentioned.

Commodity	GA	NC		KY	TN
Tomatoes (round)	0	6		4	10
Tomatoes (grape)	2	3		0	3
Cabbage	0	0		4	2
Squash (hard)	0	0		3	1
Squash (summer)	0	0		0	2
Cucumbers	0	1		3	2
Bell peppers	1	2		3	3
Sweet corn	0	0		2	0
Fresh-cut (general)	1	2		2	9
Leaf lettuce	1	1		0	1
Baby carrots	1	1		0	0
Pumpkins	1	3		0	1
All vegetables	2	1		1	3
Watermelons*	0	2		0	1
Sweetpotatoes	0	1		0	1
Sugar snap peas	1	1		0	0
Organics (all)	0	3		0	6
None (no) response	2	1		0	6
Salad mix	0	2		0	1
Number of responses	12	30		22	52

*Some people identified watermelon as a vegetable, others identified it as a fruit.

Overall, wholesalers expressed very positive feelings about the market potential for most fresh market fruits and vegetables. Many wholesalers could not or would not identify a specific vegetable they thought would decrease in market potential during the next three years (Table IV- 6). Among individuals who identified a specific vegetable that might decline, cabbage was mentioned by at least one wholesaler in every state. Several wholesalers thought that vegetables with limited marketing potential also included white potatoes, iceberg lettuce, and slicing cucumbers. North Carolina wholesalers were also concerned about sweetpotatoes, while Georgia wholesalers expressed reservations about the market potential for Vidalia onions.

Table IV-7 lists the fruits marketing agents felt had expanding market opportunities. Most wholesalers listed watermelons and cantaloupes as fruits. The majority also believed that

strong consumer acceptance of seedless watermelons, in combination with an increase in sales of watermelon chunks, would result in an increase in market potential for melons during the next few years. Similarly, strong sales for "Athena' eastern-type cantaloupe has reinvigorated Southern sales of larger (6 to 7 pound) cantaloupe. Apples and peaches were identified by at least one wholesaler in every state as fruits likely to increase their market potential near-term. North Carolina wholesalers mentioned apples as a growth industry, in part, because North Carolina's apple industry experienced a steady erosion in its market share since the mid-1990s, and wholesalers now believe that the local apple industry has readjusted and repositioned itself by planting new varieties to replace the 'Red Delicious' varieties that had dominated. Scattered plantings of Fuji, Gala, and Pink Lady have occurred in North Carolina and other Southern states. In 1999, North Carolina growers planted a new crop that was marketed as '*sprite* melon.' *Sprite* is a small (2 to 3 pounds) oriental, clear, crisp-flesh melon that is grown on nearly 1,000 acres in eastern North Carolina. *Sprite* is a new specialty crop developed as part of the North Carolina Specialty Crop program initiative and is a high-value alternative crop for eastern North Carolina. Typically, *sprite* growers realize an average marketable yield between 15,000 and 20,000 pounds per acre, and in 2003 the season-average price paid to growers was about $1 per melon. Eastern North Carolina growers and wholesalers expect this acreage to increase during the next three years.

Table IV-6. Vegetables that wholesalers expected to decrease in market opportunities during the next three years, by state, number of times mentioned.

Commodity	GA	NC		KY	TN
Cabbage	1	2		3	5
White potatoes	0	1		1	2
Iceberg (head) lettuce	0	1		0	4
Sweet corn	1	1		0	1
Sweetpotatoes	0	3		0	1
Squash (summer)	1	1		0	1
Cucumbers	0	3		1	1
Cucumbers for pickles	1	2		0	0
Bell peppers	0	1		1	1
Snap beans	0	1		0	1
Turnips	2	0		0	0
None or no response	4	8		0	22
Onions (Vidalia in GA)	1	0		1	0
Collards	1	1		0	0
Okra	0	0		0	1
Cherry tomatoes	0	0		0	1
Pumpkins	0	0		0	1
Number of responses	12	25		7	42

There was less agreement among wholesalers by state about fruit that had limited market potential during the next three years (Table IV-8). Most wholesalers had 'no response' to this question. But among commodities mentioned by marketing agents, only apples and peaches received widespread concern among wholesalers located in at least three of the four states. In North Carolina, recent plantings of wine grapes created some concern among local wholesalers who thought that plantings had exceeded current and near-term demand. Tennessee and Kentucky wholesalers were concerned about limited demand for pears, while Georgia and Tennessee wholesalers identified cherries as a commodity of limited market potential.

Wholesalers were asked to rate the importance of various factors in a list when considering whether to buy from a local grower (Table IV-9). For example, if they were unconcerned about whether or not a grower carried product liability insurance, then product liability insurance would be given a low rating (1 or 2). Alternatively, if the wholesaler considered 'precooling' so important that he or she would not buy fruits or vegetables from the grower unless the items were precooled, then precooling would be given a high score (4 or 5).

In general, wholesalers identified grading, precooling, and the buyer-seller relationship as the most important considerations. Market services provided, location of the grower, and delivery frequency were identified as 'less important' considerations according to the wholesalers. In addition to the list of factors, three wholesalers also identified 'dependability' as an important characteristic that a grower must possess. Because dependability was not included on the list of factors, the fact that three wholesalers mentioned it without prompting is notable.

Table IV-7. Fruit (excluding tropical and citrus) that wholesalers identified as likely to have an increase in plantings and an increase in market opportunities during the next three years, by state, number of times mentioned.

Commodity	GA	NC		KY	TN
Cantaloupe	2	1		1	2
Watermelons*	4	2		1	4
Peaches	2	2		1	2
Apples	1	4		1	2
All small berries	0	3		1	2
Blueberries	2	1		0	1
Strawberries	0	1		0	2
Blackberries	0	0		0	1
Sprite melon	0	2		0	0
Grapes	0	2		0	0
None or no answer	4	11		5	21
Number of responses	15	29		10	37

*Some respondents identified watermelon as a vegetable, while others identified it as a fruit. It is counted as a fruit here.

Finally, wholesalers were asked if their respective state Department of Agriculture marketing and promotion activities influenced their decisions to use local growers (Table IV-10).

Roughly, two-thirds to three-fourths of the respondents indicated that such marketing and promotion programs did not impact their buying decisions. However, during the interviews, it was apparent that wholesalers were aware of and very supportive of expanded marketing efforts such as the "Pick Tennessee" and "Goodness Grows in North Carolina" programs. Interestingly, one Tennessee wholesaler said that the Tennessee Department of Agriculture (TDA) marketing program influenced his decision because he used TDA graders to inspect loads.

Table IV-8. Fruit (excluding tropical and citrus) that wholesalers identified as likely to have a decrease in market opportunities during the next three years, by state, number of times mentioned.

Commodity	GA	NC		KY	TN
Apples	1	2		0	4
Grapes	0	3		1	1
Peaches	3	1		1	0
Pears	0	0		1	1
Cherries	2	0		1	0
Plums	0	0		0	1
None or no answer	4	10		6	28
Number of responses	10	16		10	35

Table IV-9. Important factors considered by wholesalers when they bought fruits and vegetables from local growers, by state.

Factory	GA	NC		KY	TN
Product liability insurance	3.8	3.6		3.7	3.5
Location of grower	3.9	4.1		3.8	2.6
Grading used by grower	4.9	4.3		4.7	5.0
Precooling usage	4.8	4.2		4.4	4.8
Volume (quantity)	4.2	4.0		4.5	4.2
Buyer-seller relationship	4.7	4.4		4.7	4.7
Market services provided	3.5	3.3		3.7	2.9
Customer standards	5.0	4.6		5.0	4.8
Delivery frequency	3.8	3.8		4.2	4.1
Other (dependability)	0	5.0		0	5.0
Number of responses	9	18		10	35

Respondents used a 5-point Likert response scale labeled as 1=strongly agree; 5=strongly disagree.

Table IV-10. Wholesaler's response to the question of whether or not State Department of Agriculture marketing and promotion efforts influenced their decisions to buy from local or in-state growers, by state, and percentage of total response (%).

Response	GA	NC		KY	TN
Yes	2(22)	6(32)		2(22)	9(26)
No	7(78)	13(68)		7(78)	26(74)

D. Conclusions

Wholesaler responses identified quality considerations, post-harvest handling practices, supply reliability, and volume availability as important factors when selecting a fruit or vegetable grower-shipper. In general, price and volume features were purchase considerations but were less important factors (relatively) considered by most wholesale buyers across states. Kentucky wholesalers wanted Kentucky growers to improve packaging, expand brand name use, and pack better quality produce to increase sales. Tennessee wholesalers also cited quality inconsistency plus a short self-life (due to inadequate precooling) as problems when they bought local fruits and vegetables. North Carolina and Georgia wholesalers identified a similar set of problems as the Kentucky and Tennessee wholesalers: 1) overall poor pack quality, and 2) inconsistency in quality over the season. However, higher-volume wholesalers located in Georgia and North Carolina noted that local growers often lacked adequate product volume when they wanted a specific item, so this was a problem. Growers in all four states need to be able to document and trace product movement between the farm and the warehouse, provide buyers with independent confirmation (i.e., third-party certification) concerning the overall safety of an item ranging from chemical applications to handling processes used, and also need to expand the use of shipper brand names if they wanted to expand sales.

Contract use has increased in popularity in recent years, and it appears that the trend toward increased use of fresh market contract deals will continue. The extreme perishability of most items results in price and volume fluctuations, so contract details and terms represent a challenge for both buyers and sellers. Nevertheless, it seems clear that the buyers (wholesalers) prefer agreements that use contracts, so it is likely that most grower-shippers will be required to sign a contract in the future, if they intend to do business with specialty wholesalers.

Over time fruit and vegetable marketing for commercial-scale growers has evolved into a system characterized by marketing agents, middlemen, supply chain managers, and chain stores. All depend on large volumes of products to satisfy increasing consumption. Fewer and larger buyers are in business, and considerable integration between retailing and wholesaling activities has occurred. As consolidation and concentration has taken place throughout the produce industry, the production and marketing supply chain has shifted from a scattered, decentralized network of relationships to a centralized, efficiency-driven distribution system. Within the retail sector, the supercenter concept, as practiced by Wal-Mart® stores, has emerged as a major force in the grocery sector. Wal-Mart® eliminated unnecessary and unproductive costs in the food distribution system, asked suppliers to co-manage shelf inventory, expanded demand for the product, offered choices to consumers, and forced competitors to reevaluate sales plans.

The goal of this research was straightforward: to survey wholesalers in four states to see why they decided to buy fruits and vegetables from local growers. We believe that the wholesalers who participated in this survey are representative of all fruit and vegetable wholesalers throughout the South, so the findings are broadly applicable to growers who seek to sell product to or through marketing agents (wholesalers). It is clear that buyers and growers needed to develop ‘business partnerships’ to ensure that fresh, high-quality fruits and vegetables were regularly available for customers. According to wholesalers, consistency of supply over an extended period was an important strategic competitive advantage that has been important in the expansion of the produce industry in the Southeast.

V. PUBLIC MARKET MANAGERS IN THE FOUR-STATE REGION

Managers of all the public produce markets for which there were permanent buildings and utilities on the sites were surveyed during 2001. The purpose of this survey was to obtain a snapshot of the types of market channel activities present in each of the four states. This snapshot, through its description of the current scope of public produce market activities in each state, also provides insights about the respective state's market development up to the time of the interviews.

A. Questionnaire

Information was gathered about the operations of the markets with respect to types of activities, presence of advertising budgets, fees charged growers, number of employees, extent of public financial support, number of growers, and the number of shoppers at the markets. The nature of the information to be gathered entailed the extensive use of open-ended questions about produce marketing operations at the various sites. A copy of the questionnaire is in Appendix D.

B. The Sample

Kentucky had no such markets in 2001, although there were seasonal tailgate community markets in the state. Criteria for selecting the sites were that they had to have a manager, be in a location with a permanent structure, be open for the entire harvest season, and receive public financial support. There were six, five, and five farmers' markets in Georgia, North Carolina, and Tennessee, respectively, that were included in the manager survey. Table V-1 is a summary of the results.

C. Interstate Comparisons

Wide disparities in the scale of operations were present within the Georgia and North Carolina markets. With the exception of one market in Tennessee that only focused on wholesaling, all the markets had retailing activity.

Four types of marketing activity were listed, and managers were asked to indicate if the activities occurred at their respective markets. Notice that the two more successful states have both wholesaling and retailing at all their sites, and some also have repacking and cooling. The one Tennessee location that had repacking also had cooling, but did not cater to retailing. The remaining four Tennessee markets only had retailing. With respect to the types of products sold, the results suggest that Tennessee, consistent with the reliance on retailing, has relatively more of its public markets with products other than fruits and vegetables being sold.

Fees paid by growers varied by state. Georgia had the most uniform cost, with five locations charging $7 per day and one charging $8 per day. North Carolina had a range of fees, starting at $7 during the peak harvest period, although there was a lower daily charge for special commodities in season. Tennessee's basic fees were somewhat comparable to those in North Carolina and slightly higher than Georgia's.

The number of workers at a market was dependent on the size of the operation. The largest North Carolina market had 17 full-time and four part-time employees, and the largest market in Georgia had nine full-time and no part-time workers. The largest Tennessee market had eight full-time employees and one part-time worker.

Table V-1. Results of Managers of Public Farmers' Markets Surveys.

		GA	KY	NC	TN
Number of public markets surveyed		6	0	5	5
Types of marketing activities:	Wholesaling	6	0	5	0
	Repacking	2	0	1	1
	Retailing	6	0	5	4
	Cooling	3	0	1	1
Types of products sold:	Candy	5	0	4	4
	Crafts	5	0	5	3
	Eating facilities	4	0	1	3
	Fish	1	0	2	2
	Flowers	6	0	4	4
	Fruit	6	0	5	5
	Meats	2	0	4	2
	Nursery	6	0	5	4
	Vegetables	6	0	5	5
Fee	Dollars per day	7 to 8	0	11[a]	7 to 18[b]
Number of workers:	Full time	4 to 9	0	4 to 17	1 to 8
	Part time	0	0	0 to 4	0 to 1
Expenses receiving public support:	Operating	3	0	5	5
	Utilities	6	0	0	0
	Capital	6	0	5	5
Sources of public funding:	State	6	0	6	3
	City	2	0	0	2
	County	3	0	0	3
	Development district	6	0	0	2
	Federal	1	0	0	0
Advertising budget:	No	1	0	0	0
	Yes	5	0	5	4
Start new advertising activities:		6	0	0	3
No		0	0	5	1
	Yes				
Growers using the markets	Number	100 to 4,000	0	200 to 1,100	23 to 200
Permanent vendors	Number	4 to 35	0	10 to 30	1 to 22
Estimated traffic counts	Cars per day	250 to 2,200	0	200 to 2,900	500 (only 1 est.)
Estimated customer counts	Shoppers per day	340 to 3,500	0	400 to 5,830	319 (only 1 est.)

aFor in-state growers, includes one restock/load fee.
[b]Sliding fees by market.

All three states with public farmers' markets received public financial support to cover operating costs, utilities, and/or capital expenditures. Georgia was the only state in which utilities were subsidized. North Carolina markets received their support from the state. Georgia and Tennessee also obtained financial assistance from cities, counties, and development districts. Only one market (in Georgia) received federal funds.

Each of the markets received some money for advertising, with the exception of one market in Georgia. Market managers were asked if they expected to start any new promotional activities. All the Georgia managers were going to continue with their current advertising programs, whereas all of the North Carolina managers were going to have additional marketing via digital signs on interstate highways near the locations. Only one Tennessee market expected to expand its marketing activity.

Several questions were directed toward gathering information about the scale of operations at the markets. These pertained to managers' estimates of the number of growers using the respective facilities, number of permanent vendors, estimated traffic counts, and estimated average customer counts. The smallest of the markets included in Georgia and North Carolina was estimated to have four times the number of growers vis-a-vis Tennessee's smallest public market. Furthermore, the largest of the markets in Georgia and North Carolina is at least five times larger than the most active Tennessee facility in terms of grower participation. Although the number of vendors is similar across the three states, inspection of the number of outlets in each state selling various types of products suggests that Tennessee's outlets, with greater reliance on retailing, have relatively more of these facilities selling a variety of products to consumers. Estimated traffic counts suggest the Georgia and North Carolina markets tend to draw more retail customers, in addition to the other types of marketing activities that occur. Similarly, the estimated number of retail shoppers reveals a disparity in retail patronage present at the markets.

D. Produce Market Development Implications

All of the public markets surveyed required public financial support. They spanned a range in terms of the scales of operation. None was completely self-supporting. The success of the markets with respect to fostering the development of the produce industry from the farm through the retail levels varied by state. The results of these interviews reveal the importance of the inherent simultaneity associated with market development and the synergy associated with having a variety of marketing activities occur at centralized locations.

Kentucky and Tennessee are similar in that there are no public outlets for produce marketing other than those that are retail-oriented. Hence, there is little incentive for growers to provide adequate supply to attract stakeholders who are involved in other market channel activities, such as brokering, wholesaling, and repacking. On the other hand, Georgia and North Carolina have created facilities that encompass a range of produce-marketing activities, including retail. In addition, these markets have successfully encouraged complementary enterprises, such as food distribution and institutional suppliers (e.g., for school systems), to locate in close proximity to these state markets. The variety of marketing activities encourages production because growers have alternative outlets available at centralized locations. Similarly, wholesalers, brokers, and repackers operating independently have the retail markets as backups to fill unexpected orders. Conversely, retail vendors often look to the wholesale side of the market to fill in product shortages. This tends to offset the seasonal aspects of the retail activity,

increase the range (diversity) of products offered at the market, and accentuate the appearance and perception of being a professionally run market.

The breadth and scale of operations tend to be self-sustaining. The wholesale side of these public markets is successful in generating sales dollars and volume, while the retail side is successful in generating awareness and public support for the markets. One characterization of the dichotomy between the successful versus less successful states in terms of produce market development appears to be that the primary focus in Georgia and North Carolina is on developing synergistic and complementary wholesale and retail components of public market activity. Another notable difference impacting development of managerial expertise is that market managers and other employees in Georgia and North Carolina markets are state employees; whereas markets in Kentucky and Tennessee are not supported by the state.

VI. STATE DEPARTMENTS OF AGRICULTURE IN THE FOUR-STATE REGION

State Departments of Agriculture provide production, post-harvest handling, and marketing assistance for produce growers in their respective states. The size and scope of these activities can vary significantly across states. This chapter presents some comparisons of the marketing channel infrastructure as impacted by support activities provided by these Departments of Agriculture.

A. Questionnaire

The purpose of the State Department of Agriculture interviews was to collect information about the fruit and vegetable marketing activities in each of the four states. A list of questions was developed to assist interviewers in collecting the desired information for each state. Areas covered in these interviews included staffing, budgets, and types of produce-marketing programs. A copy of the questionnaire is in Appendix A.

B. The Sample

During the spring and summer of 2002, personnel within the Departments of Agriculture in Georgia, Kentucky, North Carolina, and Tennessee with fruit and vegetable marketing responsibilities were interviewed. These interviews were with the individuals responsible for the produce-marketing programs.

C. Interstate Comparisons

All four states provided some financial support for produce marketing and assisted in organic-crop certification (Table VI-1). North Carolina and Tennessee provided money for retail point-of-sale materials and banners. The Departments of Agriculture in Georgia and Kentucky provided small grants for market development. Georgia and North Carolina paid the salaries of managers at state-owned markets and subsidized the utilities for these markets (Table VI-2). Neither Kentucky nor Tennessee had any state-supported farmers' markets, while there were 16 in Georgia and five in North Carolina. Along with the state-owned markets, the USDA Farmers' Market Directory listed 83 North Carolina markets, which does include the state-owned markets. In Kentucky, the directory identified 86 private markets. The number of Tennessee's farmers' markets (45) was half of Kentucky's.

For the state-owned farmers' markets, the sources of revenue in Georgia and North Carolina came from the state legislative level (Table VI-3). North Carolina also added to the line-item appropriation with special bills that provided funds through the NCDA budget. No funding sources were reported for Kentucky and Tennessee, because they did not operate any state-owned facilities.

Table VI-1 Types of financial support provided to produce marketers by state

Item	GA	NC	KY	TN
Small grants for advertising	yes	yes	yes	yes
Small grants for market development	yes	- -	yes	- -
Salaries of market managers	yes	yes	- -	- -
Salaries of market workers	- -	yes	- -	- -
Subsidize utilities for state markets	yes	yes	- -	- -
Organic crops and third party certification	yes	yes	yes	yes
Point-of-sale materials, banners	- -	yes	- -	yes

Table VI-2. Number of state-supported markets by state

Item	GA	NC	KY	TN
State-supported	16	0	5	0
All farmers' markets[a]	9[b]	83	86	45

[a] Obtained from AMS, USDA, Farmers' Market Directory (www.ams.usda.gov/farmersmarkets).
[b] AMS, USDA, receives this information on a voluntary basis, so apparently there has not been an effort to have managers supply this information.

Table VI-3. Sources of revenue for capital improvements at farmers' markets by state

GA	NC	KY	TN
Line item legislation	State appropriations and special local bills through NCDA	None	None

In North Carolina and Georgia, re-packing and wholesaling occurred on at least one of the state-owned markets (Table VI-4). Federal-state inspection personnel are housed in two of the North Carolina markets. All of North Carolina's markets were open year-round, while five of the 16 state-supported markets in Georgia were open year-round.

Table VI-4. Marketing activities at state-supported public markets by state.

Item	GA	NC	KY	TN
Brokering	4 markets	2 markets	-	-
Wholesaling	7 markets	5 markets	-	-
Re-Packing	3 markets	1 market	-	-
Retail Nursery	2 markets	1 market	-	-
Crafts sold	yes	yes	-	-
Inspection service	yes	2 markets	-	-
Open year-round	6 markets	5 markets	-	-

When asked how the state's budget for produce marketing changed over the past five years, Tennessee was the only state with a decreasing budget (Table VI-5). Kentucky reportedly experienced a steady budget situation, but noted that some promotional funds were shifted to grants supporting market development. In both Georgia and North Carolina, it was reported that produce-marketing budgets increased over the past five years.

Table VI-5. Changes in produce marketing budgets by state

Item	GA	NC	KY	TN
Increasing marketing budget	yes	yes	- -	- -
Decreasing marketing budget	- -	- -	- -	yes
Unchanged marketing budget	- -	- -	yes[a]	- -

[a] Shifting from promotion efforts to grants for market development.

The increase in the produce marketing budget in North Carolina resulted in an increase by one more person from 12 to 13 assigned to this area (Table VI-6). In Georgia the number stayed the same, 20. While Kentucky reportedly did not increase the budget, the number of workers increased from two to six. Tennessee's number remained steady at one person.

Table VI-6. Number of staff working on produce marketing by state: 1995 and 2000.

Produce Marketing Personnel	GA	NC	KY	TN
1995	20	12	2	1
2000	20	13[a]	6	1

[a] Does not include market managers or assistant managers.

A question asked about the location and assigned responsibilities of the produce marketing staffs of the four Departments of Agriculture (Table VI-7). For Georgia the response seemed to identify the market managers, some of whom were full time and some were part time. The specialists in Kentucky and Tennessee worked on developing business relationships among growers, wholesalers, and retailers to facilitate sales of fruits and vegetables produced in-state. For North Carolina, the level of support from the state for the produce industry is impressive. Three crop specialists facilitate sales to chain store buyers, food service buyers, and international outlets; however, they do work on all North Carolina crops, not just fruits and vegetables. Eleven other specialists are also shown in the table by city and designation of specific fruits or vegetables each was assigned to handle.

Table VI-7. How are produce marketing staff assigned by city location and by responsibility?

State	Personnel	Location
GA	Market Managers	Full time: Atlanta, Augusta, Columbus, Macon, Savannah, and Thomasville Part time: Albany, Cairo, Cordele, Donaldsonville, Jesup, Moultrie, Pelham, Tifton, Valdosta
NC	Assistant Director	Raleigh: assigned to all horticultural crops
	Horticultural Specialists	Asheville: apples, tomatoes, vegetables Asheville: nursery, herbs, Christmas trees Elizabeth City: leafy greens, small fruits Elizabeth City: potatoes, cabbage, pumpkins Elizabeth City: vegetables and turfgrass Kinston: melons, specialty crops, cantaloupes Lumberton: greenhouse vegetables, watermelons Raleigh: commercial flowers, transplants Raleigh: grapes, strawberries, wine Raleigh: peaches, organics, vegetables Roseboro: sweetpotatoes, pecans, blueberries, vegetables
	Crop Specialists (all crops, not just produce)	Raleigh: facilitates sales to chain store buyers Raleigh: facilitates sales to food service buyers Raleigh: facilitates international sales
KY	Specialists	Frankfort: assigned to all horticultural crops
TN	Specialist	Nashville: Assists growers, wholesalers, retailers to facilitate sales of fruits and vegetables

While the comments noted in Table VI-8 regarding the scope of activities for each person on the marketing staff are slightly different, the overall responsibility appears similar. This similarity fades in light of the number of specialists noted in Table VI-7.

Table VI-8. Produce marketing staff activities by state.

GA	Promotion, customer service, and education.
NC	Assistance to individual growers striving to market their crops. Work with commodity associations to expand the demand for crops.
KY	General assistance as requested.
TN	Assistance to individual growers striving to market their crops.

Another similarity in the marketing staff in the four states is that, while some have an agricultural background or a B.S. degree in a field related to agriculture, the ability to work well with people was emphasized and that on-the-job training was acceptable (Table VI-9).

Table VI-9. Staff background in the produce industry by state.

GA	Some are past growers, more emphasis on hiring based on "people" skills than having a background in agriculture. Trained on-the-job.
NC	Some former farmers, some with business background, usually required to have B.S. degree in an agriculture-related field.
KY	Some are past growers. Trained on-the-job.
TN	On-the-job training.

Interviewees were asked to indicate the five most important/effective marketing programs they had. Respondents in all four states identified similar programs in their listings of the top five (Table VI-10). North Carolina placed leading emphasis on trade shows and buyer tours of farms. The Tennessee specialist noted buyer visits to farms as the most important program, followed by trade shows. Georgia, Kentucky, and Tennessee noted their state promotional logo campaigns to promote home-grown products. Interestingly, in North Carolina the interviewee did not list such a program in the identification of the top five programs. In Georgia and Kentucky, directories identifying growers and buyers were included in the top five programs in their states.

Georgia's agent listed several certification programs as part of their post-harvest handling programs operated by the Department of Agriculture (Table VI-11). Tennessee only included support at trade shows and one-on-one assistance to growers. Organic certification was noted in Georgia, Kentucky, and North Carolina.

When asked if additional facilities are needed in the state, for Kentucky and Tennessee the response was yes, and in Georgia and North Carolina the response was no (Table VI-12). As might have been expected, the persons interviewed in Georgia and North Carolina were more satisfied with the support provided to the produce industry by the state (Table VI-13). In Kentucky and Tennessee, the challenge of trying to develop programs with small staffs and/or very limited funding was evident. This is consistent with a follow-up question that asked about industry support (Table VI-14). In North Carolina two new state-owned and managed markets opened in the last six years. In Georgia support for the publically owned markets has been increasing based on the number of growers participating, but customer counts are decreasing.

Table VI-10. Five most important or effective produce marketing programs by state.

GA	"Bring-Home-Georgia-Grown" promotion Export promotion Organic production and registration Monthly farmers and consumers marketing bulletins Georgia fruit and vegetable directory of growers, buyers, packers, and brokers
	Trade shows - Flavors, PMA, Canadian trade Buyer tours of farms Commodity promotion programs - varies by commodity/area from year to year Custom promotions for chain stores regarding locally grown brands Farm-to-School programs - have schools buy and feature local produce in cafeterias
KY	"Kentucky Fresh" for locally grown promotion Center for Agricultural Education (calendar, market news, prices) Kentucky Agricultural Directory (leaders, business organizations, gov. agencies) KDA Country Store - a Web-based shopping site for KY foods and products Buy Kentucky Products Directory that included fruits and vegetables
TN	One-on-one visits to buyers (hosting buyers to farms) Trade shows "Pick-Tennessee-Products" promotion Arrange logistics for direct-store delivery from small growers to large retailers Promotional money from Pick-Tennessee-Products agricultural vehicle license plates to farmers' markets

Table VI-11. Post-harvest handling programs by state.

GA	Inspection, grocer certification, organic certification, food warehouses, food service certification, convenience store certification, food processor certification
NC	Organic certification via USDA grant money
KY	Organic certification
TN	One-on-one grower assistance, trade shows

Table VI-12. Additional facility needs by state.

GA	No. Concentration of production has led to reduction in facility need at some locations and cut-back in direct-outlet facilities due to competition from local private markets
NC	No. Only need would be pre-cooling and short-term cold storage space to rent to growers
KY	Yes. Have worked for years to use NC model. Barriers to success are Cincinnati wholesalers, local county governance, and growers seeing loss of independence
TN	Yes. Post-harvest cooling, cooling and packaging facilities, centralized locations of assembly markets that many farmers could use

Table VI-13. Produce industry support for marketing programs by state.

GA	More commodity organizations, increasing interest in "Georgia Grown" program, and interest in food security increasing
NC	Strong, especially from commodity associations, which supply most of the promotional dollars
KY	More activity by individual commodity associations. Also, momentum seems to be increasing for the formation of cooperatives to build volumes needed to meet demands of commercial buyers
TN	Ineffective because of inadequate funding. Current programs strategically targeted to accomplish the most good with the limited funds available

Table VI-14. Produce industry support for public marketing facilities by state.

GA	Grower use increasing, consumer counts are decreasing, but total sales are increasing
NC	NCDA has received funding to build two new markets in the last six years
KY	Interest seems to be slowly increasing, which is encouraging
TN	Aggressive in promoting markets, encouraging grower use, and the P-TN-P and Shop at the Farmers' Market programs

Respondents were asked to describe their marketing programs and the budget for 2000. Table VI-15 summarizes the results. Unfortunately, differences among the budgets of the states did not allow for direct comparisons. Only Georgia and Kentucky reported an overall amount, and the activities within each state department were somewhat different. Kentucky's budget was 40 percent of Georgia's, and there was no breakdown for produce. North Carolina and Tennessee had limited state-level promotional funds.

Table VI-15. Promotion programs and budgets by state for 2000.

State	Promotional/development budgets	
	Total budget for all commodities	Segment of total budget for produce
GA	$5 million for promotion of all commodities, certifications,) and export personnel in six out-of-country offices	Not able to provide separate number, but does cover produce marketing and the farmers' markets
NC		$60,000 plus $10,000 to cover PMA booth cost share
KY	$2,000,000 for promotion and small grants for market development with all commodities	Not able to provide separate number
TN		$40,000 for Pick-TN-Products program, which includes some radio ads, free TV ads during P-TN-P month, and extensive point-of-sale material for retailers

D. Implications

Results of the interviews point to important differences among the states. Georgia and North Carolina legislatures provide more direct financial support for produce marketing. As a result, there are more large state-supported farmers' markets in these two states, whereas Kentucky and Tennessee have mostly private and less organized farmers' markets. Another important difference is that Georgia's and North Carolina's state-supported markets have more intermediate marketing activities at these facilities.

The current situation with respect to produce market development is a reflection of past support. Both Georgia and North Carolina state markets have experienced greater state support than either Kentucky or Tennessee. Georgia and North Carolina Departments of Agriculture have larger staffs with produce-marketing responsibilities. In addition, their programs tend to have more post-harvest emphasis, whereas Kentucky and Tennessee are focused on direct marketing and promoting produce within the respective state. Growers in Georgia and North Carolina receive state-supported help beginning with the initiation of production decision making and continuing through harvesting, post-harvest handling, and marketing. North Carolina has 16 Department of Agriculture/North Carolina State University stations with horticultural components. While Kentucky and Tennessee legislatures have provided financial support, it has been in the form of one-time capital appropriations, but they have not provided consistent line-item support for the operation of markets. Further evidence of long-term support was noted by Georgia and North Carolina respondents, indicating more farmers' markets were not needed. Clearly these two states have created larger state-owned infrastructures (critical masses) to support produce production and distribution.

VII. IMPLICATIONS FOR MARKET DEVELOPMENT

Fruit and vegetable growers have always faced dynamic, rapidly changing markets. Produce markets are constantly evolving because of underlying factors, such as consumer tastes and preferences, weather patterns, regulatory legislation, insect/disease infestations, production costs, and marketing logistics. In addition, evidence suggests that significant changes in market structure are occurring in the fresh fruit and vegetable industry in that the flow of produce from farm to consumer follows a different path than it once did. Rather than making heavy use of the wholesale terminal markets, retailers (large ones in particular) are purchasing a larger portion of fruits and vegetables directly from shippers. Farms and supermarkets alike are expanding, while it appears that the wholesaler sector is decreasing in size. Alternative forms of pricing, such as rebates, slotting fees, and other kinds of allowance, are becoming more common. Some industry sources suggest that mergers at the retail level are driving many of these changes.

In light of these structural changes occurring in the produce industry, fruit and vegetable growers find themselves in a continual cost-price squeeze as the downward pressures on price (resulting from the increased purchasing power associated with fewer produce buyers) force growers to increase their volumes in an attempt to minimize per-unit production and marketing costs. Today's produce transactions are very different from the traditional emphasis/focus on f.o.b. commodity-oriented pricing, with growers competing for shelf space through "ad" pricing. Instead, growers must offer value-added services and product traits demanded by produce buyers, such as:

(1) growing varieties that have been specifically designed/developed for taste and nutritional qualities;
(2) using cooling technologies in the field, packing shed,,and during transport to reduce product temperatures, enhance quality, and increase shelf life;
(3) offering on-time and just-in-time delivery schedules, sometimes involving multiple deliveries per week;
(4) customizing palletizing, packaging, and product labeling requirements;
(5) tracking and traceability from the field to the site of sale;
(6) producing in a manner that is "safe," that is, free from microbial and pesticide contamination;
(7) developing fresh produce contracts, sometimes on a multiple year basis; and
(8)
offering a constant supply of diverse produce items on a year-round basis.

Although these services do tend to act as a means for growers to differentiate themselves from the competition, they also increase costs dramatically, further eroding profits, especially for small and mid-sized fruit and vegetable growers. *Volume* and per-unit costs are inversely correlated, so unless sufficient volumes can be produced and/or marketed by the grower (or grower organizations) in some vertically coordinated fashion to reduce per-unit costs, the chances of success and long-term survival are much lower for independent smaller-volume growers.

In the midst of these structural changes, facilitating the roles of key produce industry participants is more involved and crucial than with other crops or livestock, particularly because of the seasonality of fruit and vegetable production, the perishable nature of these products, and the constantly shifting supply from produce regions. Historically, Extension Services, Experiment Stations, and state Departments of Agriculture have been actively involved in the marketing of fruits and vegetables. Production-related research has been conducted over several

decades regarding best management practices associated with fruits and vegetables. Research in agricultural economics has focused on the costs and returns of growing, packing and processing operations; market windows; and competitive position studies. The Cooperative Extension Service has provided educational programs and assistance in facilitating market development. Several types of marketing support have also been provided by state Departments of Agriculture. Notably, several Southern states have provided coordinated development of public marketing facilities and marketing activities. The extent of their involvement seems to be positively correlated with the growth of fruit and vegetable production in their respective states. But none of the extant research viewed produce market development from a small versus larger grower perspective and the ways these operations contributed to the development of market infrastructure and channels from the farm gate to the consumer.

This study focused on an assessment of the comparative produce market development activities in the states of Georgia, Kentucky, North Carolina, and Tennessee because of commonalities, such as the prevalence of small farms, the reliance on tobacco as a cash crop, and the comparable growing seasons in all four states. Each state has historically had a large number of small-volume growers, but production in Kentucky and Tennessee has not kept pace with the other two states. For decades, many growers in these four states grew a similar mix of livestock and crops, and most growers derived their primary source of income from tobacco. Over time, however, the mix of commodities changed. By 2002, Kentucky growers reported that a majority of gross farm receipts were obtained from the sale of horses, broilers, and cattle. Similarly, Tennessee growers had moved away from tobacco as the principal source of income and obtained about one-third of their total 2002 gross farm cash receipts from beef cattle and broiler sales. In North Carolina and Georgia, similar trends occurred as growers moved away from tobacco and into hog, broiler, and greenhouse-nursery production by 2002. In North Carolina, tobacco production has remained important but accounted for about $650 million (9.9 percent) in net farm income by 2002. In Georgia, tobacco receipts also declined and now account for less than 5 percent of Georgia producer farm income.

A. Extension

County agents with horticultural responsibilities were interviewed in each state about produce-related programs, professional training and development activities, and the need for additional support. Extension agents were asked to indicate the relative importance of produce-related information and services being demanded by growers. Overall, there was a fair amount of agreement among the states with respect to the relative positions of the service areas. Pest control was most frequently requested in all three states. Soil tests, market development, and variety recommendations comprised a group of information requests that had comparable overall scores after pest control. The county agents in all four states indicated they had offered programs in establishing or managing farmers' markets; pesticide certification; market pricing; and meetings, short courses or conferences. North Carolina and Georgia had provided assistance in all the areas listed. Neither Kentucky nor Tennessee had developed programs in agritourism, direct sales to schools and restaurants, or marketing weather-damaged produce. Unlike their North Carolina and Georgia counterparts, Kentucky respondents had not provided information on packaging or vegetable field days and Tennessee respondents had not conducted educational tours of other production regions.

All four states have implemented comparable staffing strategies. However, the divergence in the number and size of produce operations has resulted in quite different numbers

of Extension agents with produce responsibilities. In those counties in which there is sufficient activity, there are horticultural Extension agents. Staffing levels in Kentucky and Tennessee were several times lower than those for Georgia and North Carolina. The latter pair of states also had industry-oriented training programs for new hires that reflected demand in counties where produce production was high. North Carolina had horticultural agents in every county. The simultaneity encountered here was that fewer and smaller produce operations led to lower demand for Extension programs with respect to not only staffing, but also in terms of production, post-harvest handling, and marketing support.

B. Growers

Produce growers in each of the states were surveyed. Characteristics of the respondents and their operations by state were consistent with the *1997 Census of Agriculture* (U.S. Department of Agriculture). Kentucky and Tennessee farmers tended to have smaller operations in terms of acreage, produce sales, and farm income than the typical Georgia and North Carolina counterparts. Growers were asked to estimate the percentages of their sales that went through each of the possible market outlets. The weighted averages by state for each type of outlet were calculated, and both Tennessee and Kentucky had significantly higher concentrations of direct market sales than Georgia and North Carolina. Tennessee's largest outlet share was "wholesalers," while North Carolina was almost evenly split between "direct to retailers" and "wholesalers" and had the highest average for "direct to retail store." Tennessee's "wholesalers" share was larger than the other two states, and Kentucky had the largest share of weighted sales going to “co-ops." Notable among the percentages is the "shipper-packer" share for North Carolina, which was 17.4 percent versus less than 1 percent for Kentucky and Tennessee.

The extent of North Carolina and Georgia produce activity vis-a-vis Kentucky and Tennessee was consistent with the produce-related behaviors of the typical growers in the states' samples. The percentages of each states’ grower respondents indicating interest in expanding their operations were 58 percent for Kentucky, 69 percent for North Carolina, and 53 percent for Tennessee. Respondents were given a list of 14 factors that could limit expansion and were asked to indicate the extent to which they were limiting. The rankings of the average scores were similar across states, with “labor availability, market outlets, and prices received" being the three highest factors stated, and "equipment, transportation, and credit availability" the lowest. North Carolina growers tended to indicate that "prices received, market outlets, and cooling" were limiting, which is consistent with these growers having greater interaction with the commercial distribution system. Tennessee growers were more likely to have indicated "disease control" was a problem.

In general, the level of grower activity in North Carolina and Georgia greatly exceeds that found in Kentucky and Tennessee. North Carolina and Georgia growers have created “critical mass” in terms of volumes and interest in marketing vis-a-vis Kentucky and Tennessee. For example, when asked to indicate the organizations or people they would consult with about marketing a new crop, the states had similar proportions of growers who stated they would first ask "other growers," closely followed by "Extension." The only exception was "the co-op" for which Kentucky and North Carolina were more likely than Tennessee growers to use as a market information source.

C. Produce Marketing Agents

We interviewed representatives from "marketing agent" firms, defined as that subset of wholesalers who conducted the bulk of their transactions in the four-state area and were in business primarily to buy and resell fruits, vegetables, and melons. The number of these intermediaries that operate in the respective states is one important indicator/measure of the extent of market development in each state. Secondary references (e.g., the Red Book and Blue Book) indicate that Georgia and North Carolina have considerably more marketing agents than do Kentucky or Tennessee, which is reflective of the greater orientation toward the commercial produce-marketing systems in those states. Important functions that these intermediaries provide include buying in bulk quantities from growers; grading and repacking; fresh/canned/frozen processing; refrigerated storage; and sales and transport to independent grocers, institutions (e.g., hospitals, schools, etc.), restaurants, supermarket warehouses or retail sites, and other distributors. The ability of small independent growers to forge relationships with these agents is more limited in Kentucky and Tennessee. That is, the lower frequency of larger growers in these two states lowers the likelihood that smaller growers have had the opportunity to work with marketing agents. And, as noted in the next section, the scope of the activities at public markets in Kentucky and Tennessee exacerbates the problem.

D. Public Market Managers

These markets had to have a manager, be open for the entire harvest season, have permanent buildings, and have received public financial support. Kentucky had no such market. Georgia had six, North Carolina had five, and Tennessee had five of these markets. Managers of each of these markets were interviewed.

All three states with public farmers' markets received some level of public financial support to cover operating costs, utilities, and/or capital expenditures, so none was completely self-supporting. Georgia was the only state in which utilities were subsidized. North Carolina markets received their support from the state. Georgia and Tennessee also obtained financial assistance from cities, counties, and development districts. Only one market (in Georgia) had received federal funds. Funding is a critical issue, however, and the success of the markets with respect to fostering the development of the produce industry from the farm through the retail levels varied by state. The results of these interviews revealed the importance of the inherent simultaneity associated with market development and the synergy associated with having a *variety* of marketing activities occur at centralized locations.

Kentucky and Tennessee are similar in that there are no public outlets for produce marketing other than retail. Hence, there is little incentive for growers to provide adequate supply to attract stakeholders who are involved in other market channel activities, such as brokering, wholesaling, and repacking. On the other hand, Georgia and North Carolina have created facilities that encompass a range of produce-marketing activities, including retail. In addition, these markets have successfully encouraged complementary enterprises, such as food distribution and institutional suppliers (e.g., for school systems), to locate in close proximity to these state markets. The variety of marketing activities encourages production because growers have alternative outlets available at centralized locations. Similarly, wholesalers, brokers, and repackers operating independently have the retail markets as backups to fill unexpected orders. Furthermore, retail vendors often look to the wholesale side of the market to fill in product

shortages. This tends to offset the seasonal aspects of the retail activity, increase the range (diversity) of products offered at the market , and accentuate the appearance and perception of being a professionally run market. The breadth and scale of operations tend to be self-sustaining. The wholesale side of these public markets is successful in generating sales dollars and volume, while the retail side is successful in generating awareness and public support for the markets.

E. State Departments of Agriculture

Within each state Department of Agriculture, people responsible for fruit and vegetable marketing were interviewed. Georgia and North Carolina indicated the greatest number of their respective department's staff that are assigned to fruit and vegetable marketing with 20 and 15 marketing specialists respectively (not including market managers or assistant managers). Interestingly, several of North Carolina's Department of Agriculture staff are former Extension agents. Kentucky and Tennessee had considerably fewer personnel assigned to produce marketing with six and one staff persons, respectively.

In Georgia and North Carolina, a number of publicly funded farmers' market facilities were built. The state of North Carolina built five public farmers' markets, while Georgia constructed 16 publicly funded community markets. Conversely, the states of Tennessee and Kentucky did not build a single farmers' market facility using state appropriations, although several city and county governments in Tennessee did construct community markets that serviced local produce and specialty crop growers.

Marketing services from Departments of Agriculture typically included fruit and vegetable directories of growers, packers, wholesalers,or brokers (several were also on-line Internet-based directories); state-focused generic promotional programs; trade show hosting and promotions; export promotions and reverse trade missions; farm-to-school programs where produce is sold and distributed to local school systems; and sponsorship of state farmers' markets and/or marketing centers.

The types of financial support offered to fruit and vegetable growers by the respective departments differed between North Carolina/Georgia and their Kentucky/Tennessee counterparts. Georgia and North Carolina provided funding for advertising, promotion and market development grants; salaries of market managers (NC even provided salary funds for market workers); subsidies to pay for the utilities of state farmers' market facilities, and organic third-party certification. Kentucky and Tennessee only provided grants for advertising and organic certification. Both North Carolina and Georgia reported an increase in funding over the last five years.

Publicly sponsored (through Departments of Agriculture) produce markets also play a key role in market development. Managers of all the public produce markets (for which there were permanent buildings and utilities on the sites) were surveyed during 2001 to obtain a snapshot of the types of market channel activities present in each of the four states. Kentucky had no such markets in 2001, although there were seasonal tailgate community markets in the state. There were six, five, and five farmers' markets in Georgia, North Carolina, and Tennessee, respectively, that were included in the public market manager survey. Wide disparities in the scale of operations were present within the Georgia and North Carolina markets. With the exception of one market in Tennessee that only focused on assembly/packing/shipping, all the markets had retailing activity.

The Tennessee and Kentucky Departments of Agriculture operated with limited funds, so they were unable to provide growers with an broad range of support services, people, marketing help, promotional assistance, or scientific advice. A comparison of year 2000 farm and farm-related employment figures for the agricultural processing and marketing sector by state revealed significant differences across states. It can be argued that as more people work in the agricultural processing and marketing sectors then growers would reap greater benefits, particularly small and moderate-scale growers with limited labor and funds. In North Carolina, the average proportion of population employed in the agricultural processing and marketing sectors was 4.6 percent, while Georgia employed about 3.0 percent. In contrast, Tennessee and Kentucky data indicated significantly lower levels of involvement in marketing and processing sectors, with only 2.3 percent of the employed population of Tennessee specializing in agricultural processing and marketing while about the same proportion worked in these industries in Kentucky.

This suggested that Tennessee and Kentucky producers had fewer marketing options and assistance available to them than did either North Carolina or Georgia growers. Marketing assistance was critical for many Kentucky and Tennessee farmers, because most farms (about 91 percent in Tennessee and 88 percent in Kentucky) reported total annual sales of less than $50,000 in 2000. In Georgia and North Carolina, a majority of farms also reported total annual sales less than $50,000 but also a large percentage (25 percent) of firms reported sales greater than $50,000. Thus, the average sales figures in Georgia and North Carolina were much higher. In addition, the steady-to-declining demand reported by many Tennessee and Kentucky growers was in direct contrast to the positive sales growth reported by other growers, especially Georgia and North Carolina growers.

F. Simultaneity and Produce Market Development

The implication stemming from the need for critical masses of buyers and sellers throughout the distribution system is that broad-based interactions are crucial. That is, addressing the simultaneity problems at one point in the flow of products from the farm gate to the consumer, portrayed in Figure I-1, may be ineffective if other upstream or downstream critical masses are absent. Facilitating market development requires coordinated efforts at **every** stage of the commercial distribution system. Thus, the areas in red in that figure comprise places where critical masses are necessary, but not present in the two lagging states vis-a-vis the two successful states. Just building facilities is insufficient as critical masses of buyers and sellers need to come together with products that are in sufficient volumes and over sufficient time periods and with the properties that buyers want. Support for production, for post-harvest handling, and for market facilities that cater to alternative outlets in close proximity are also required.

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APPENDIX A: Extension Survey

Date:_____

Interviewer: _____

Person Interviewed:_____ Phone: _____
Title: _____
Address: _____
_____
_____

1. Please characterize the demand for information and technical assistance from produce growers in the following areas.

	Level of Response		
	Low	Medium	High
Soils testing	1	2	3
Variety recommendations	1	2	3
Pest control (insect, weed, disease)	1	2	3
Poet-harvest handling	1	2	3
Budgets/economics	1	2	3
Integrated pest management	1	2	3
Organic production	1	2	3
Market development	1	2	3
No-till	1	2	3
Irrigation	1	2	3
Greenhouse	1	2	3
Best management practices	1	2	3
Value-added	1	2	3
Cooling	1	2	3

2. Has the staffing for specialist and county agent horticultural production assistance been increasing or decreasing over the past 5 years?

Increasing Decreasing Explain: _____
_____
_____

3. Over the last 3 years, what types of marketing assistance programs have Extension agents provided to growers?

Program	Description

4. Have you obtained professional development training for produce marketing? Yes No
If yes, please describe.

5. Describe any programs you have for organic produce.

6. What in-service training and/or educational conferences relative to produce have you participated in over the last three years?

7. What additional support/resources do you need to assist produce growers?

8. Do you have training programs specifically for new hires? Yes No

9. How are training programs determined for Extension agents?

APPENDIX B: Grower Survey

1. In what county is your farming operation based? _____

2. What is your age?
   ___ under 30
   ___ 31-40
   ___ 41-50
   ___ 51-60
   ___ over 60 years

3. How many years have you been growing produce commercially?

   ___ Less than 3 ___ 3-6 ___ 7-10 ___ Over 10

4. What else did you raise on your farm in 2001? (Circle all that apply)

   Livestock Tobacco Row crops

   Other, please list _____

5. Are you interested in expanding your produce production?
   Yes No

6. If you were to start production of a new crop, what sources of information for **growing** the commodity would you use? (Circle all that apply)

Farm Bureau	Another grower
Extension	Input supplier
Buyer	Internet
Grower organization	State Department of Ag.
Farm Service Agency	No one

7a. In terms of acreage, what are the types of produce that you are growing or plan to grow in 2002?

VEGETABLES	ACRES	VEGETABLES	ACRES
Asparagus		Peppers, Jalapeno, etc.	
Beans, Snap		Potatoes, White	
Beets		Pumpkins	
Broccoli		Squash, Summer	
Cabbage		Squash, Winter	
Cantaloupes		Sweet Potatoes	
Carrots		Tomatoes	
Chinese Cabbage		Tomatoes (greenhouse)	
Chicory, Endive		Turnips	
Cauliflower		Watermelons	
Corn, Sweet		Herbs	
Corn, Ornamental		Other Vegetables	
Cucumbers			
Eggplant			
Cabbage		FRUITS	
Greens		Apples	
Leaf Lettuce & Romaine		Blackberries	
Lettuce (greenhouse)		Grapes	
Okra		Peaches	
Onions		Pears	
Parsley		Strawberries	
Peppers, Bell		Other Berries	
Peppers, Pimento		Other Fruits	

7b. If any of the above were grown organically, please circle the acreage.

7c. Please list any crops you plan to expand in 2002 along with anticipated acreage.

8. For each factor listed below, please indicate the extent to which you feel it is a factor that limits your ability to expand your produce operation.

	Not Limiting				Very Limiting
Land	1	2	3	4	5
Labor management	1	2	3	4	5
Harvest labor availability	1	2	3	4	5
Credit availability	1	2	3	4	5
Equipment	1	2	3	4	5
Insect control	1	2	3	4	5
Prices received	1	2	3	4	5
Market outlets	1	2	3	4	5
Weather	1	2	3	4	5
Irrigation	1	2	3	4	5
Disease control	1	2	3	4	5
Transportation	1	2	3	4	5
Cooling	1	2	3	4	5
Labor housing	1	2	3	4	5
Other	1	2	3	4	5

9. In your opinion, how useful are the following in your produce operation? (There are no right answers; we are just interested in your opinion.)

	Not Useful				Very Useful
University Branch Station	1	2	3	4	5
University Extension/area agents	1	2	3	4	5
State Dept. of Ag. marketing	1	2	3	4	5
programs	1	2	3	4	5
Farm Credit Bureau	1	2	3	4	5
Input suppliers					

10. Do you ... ? (Circle all that apply)

Attend trade shows	Participate in grower organizations
Try new varieties	Receive market news publications
Attend field days	Practice integrated pest management

11. About what percentage of your produce sales goes to:

Direct markets (farmers' markets, u-pick, etc.)	____%
Direct to retail market (grocery, green grocer, etc.)	____%
Cooperative/marketing association	____%
Wholesale (noncooperative) market	____%
Processor	____%
Direct to local restaurants	____%
Internet	____%
Shipper/packer (sell via another grocer)	____%
Community-supported agriculture	____%
Auctions	____%
Total	100%

12. If you only direct market, what do you feel are the barriers to shifting completely to wholesaling? (Please circle all that apply.)

    Lower price
    Access to wholesalers
    My volume too small
    Cooling requirements
    Grading and packaging requirements
    Time delay in receiving payment
    Fees charged by shipper/packer too high
    High brokerage fees

13. Do you use a service to find workers to hire? Yes No

14. Do you have a computer? Yes No

15. Do you have Internet access? Yes No

16. If your answer was "Yes" to question 15, how do you use the Internet? (Circle all that apply.)

    Selling Buying inputs Finding information

17. Do you expect any changes in your operation in the next year related to each of the following? (Please check each item.)

	Increase	Stay the Same	Decrease
Organic production	_____	_____	_____
Direct marketing	_____	_____	_____
Wholesale/broker marketing	_____	_____	_____
Value-added/processing	_____	_____	_____
Participation in cooperatives	_____	_____	_____
Use of irrigation	_____	_____	_____
Branding	_____	_____	_____
Traceback (tracking from field to retail)	_____	_____	_____
Change crops	_____	_____	_____
On-farm cooling	_____	_____	_____
On-farm packing/grading	_____	_____	_____

18. How do you decide what produce to grow? (Circle all that apply.)

Experience	Production expertise
Market access	Labor timing/availability
Risk	Price
Profit potential	Equipment needs

19. If you considered production of another crop, who would you ask about **marketing** the commodity? (Circle all that apply.)

Farm Bureau	Another grower
Extension	Input supplier
Buyer(broker/wholesaler)	Grower organization
State Dept. of Ag.	Co-op
No one	

20. When considering a new crop, how important is each of the following in your decision making?

	Not Important				Very Important
Contracting	1	2	3	4	5
Broker/packer fees	1	2	3	4	5
Market location	1	2	3	4	5
Grading	1	2	3	4	5
Cooling	1	2	3	4	5
Volume requirements	1	2	3	4	5
Buyer-seller relationships	1	2	3	4	5
Transportation	1	2	3	4	5
Meeting buyer standards	1	2	3	4	5
Insurance	1	2	3	4	5
Other _____	1	2	3	4	5

21. Are you a grower-shipper? Yes No

22. Do you pack your produce yourself? Yes No

23. If you do **not** use a broker or wholesaler to sell any of your produce, which **TWO** of the following are the most important factors in your **not** using them? (Circle two.)

Volume requirements	Fees
Packing	Grading
Precooling	Payment practices
Broker availability	

24. Do you pay someone else to do any of the following with your produce? (Circle all that apply.)

Grade Pack Cool Sell

25. Please circle any of the following you use on the farm.

Sorting tables	Boxes	Sizers
Precoolers	Quick-cooling	Branding
On-farm processing	Washing equipment	PLU labels
Retail packing	Holding coolers	

26. For growers in this area, what produce commodities do you expect to **increase** in market opportunities over the next five years?

    Fruit: _____
    Vegetables: _____

27. For growers in this area, what produce commodities do you expect to **decrease** in market opportunities over the next five years?

    Fruit: _____
    Vegetables: _____

28. Do you believe traceback (the tracking of products from the consumer to the grower-shipper) will impact your operation over the next few years? Yes No

29. Have you implemented any of the following? (Circle all that apply.)

    Product liability insurance PLU coding
    Organic labeling IPM

30. In 2001, did you contract the sale of any of your produce for the fresh market? Yes No

31. If you have transitioned from direct marketing to wholesaling; how did that occur?

    _____
    _____
    _____

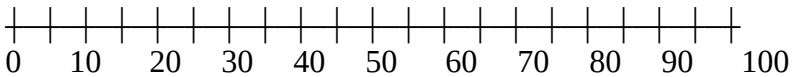
32. What were your approximate total gross sales from **produce** in 2001?

    __ Under $20,000
    __ $20,000 to $49,999
    __ $50,000 to $99,999
    __ $100,000 to $249,999
    __ $250,000 to $499,999
    __ $500,000 or more

33. What were your approximate total gross sales from **farming** in 2001?

    __ Under $20,000
    __ $20,000 to $49,999
    __ $50,000 to $99,999
    __ $100,000 to $249,999
    __ $250,000 to 499,999
    __ $500,000 to 749,999
    __ $750,000 to $999,999
    __ $1,000,000 or more

34. What percent of your approximate total household income (before taxes) in 2001 was from farming? (Please circle.)



APPENDIX C: Produce Marketing Agent Survey

Date: _____
Interviewer: _____

Person Interviewed: _____ Phone:

Title: _____
Address: _____
_____
_____

Blue Book classification: _____

1. Do you buy directly from growers? Yes No

2. What type of stores does your company service? (Circle all that apply)

Company retail outlets Independent grocers Institutional/restaurants
Other distributors

3. What types of functions does your company perform? (Circle all that apply)

Buy (take title) Pack Store Transport Arrange transport Arrange sale

4. Please rate each of the following requirements of a scale of 1 to 5 for their importance when buying fresh produce.

	Not Important				Very Important
A. Contracting	1	2	3	4	5
B. Labeling	1	2	3	4	5
C. PLU coding	1	2	3	4	5
D. Traceback	1	2	3	4	5
E. GM (genetically modified) produce	1	2	3	4	5
F. EDI (electronic data interchange)	1	2	3	4	5
G. Duration of supply	1	2	3	4	5
H. Support mechanism/program for branded produce	1	2	3	4	5
I. Third party certification/quality assurance	1	2	3	4	5

5. Please indicate the extent to which you agree with the following statements about local farmers.

	Strongly Agree				Strongly Disagree
A. They are consistent	1	2	3	4	5
B. They meet quality requirements	1	2	3	4	5
C. They can grow products buyers want	1	2	3	4	5
D. They provide adequate volume	1	2	3	4	5
E. They want to sell to wholesalers	1	2	3	4	5
F. They accept fair prices	1	2	3	4	5
G. They understand market conditions	1	2	3	4	5

6. How important do you believe each of the following will be **over the next few years**?

	Not Important				Very Important
A. Traceback	1	2	3	4	5
B. Contracting	1	2	3	4	5
C. Third party certification	1	2	3	4	5
D. Organics	1	2	3	4	5
E. Branded produce	1	2	3	4	5

7. What are the top three problems in purchasing more local produce?

1. _____
2. _____
3. _____

8. What vegetables do you expect to increase in market opportunities over the next three years?

_____
_____
_____

9. What fruit do you expect to increase in market opportunities over the next three years?

_____
_____
_____

10. What vegetables do you expect to decrease in market opportunities over the next three years?

_____
_____
_____

11. What fruit do you expect to decrease in market opportunities over the next three years?

_____

_____

_____

12. When you are considering whether to buy from a grower, please rate the following.

	Not Important				Very Important
A. Product liability insurance	1	2	3	4	5
B. Location	1	2	3	4	5
C. Grading	1	2	3	4	5
D. Cooling	1	2	3	4	5
E. Volume requirements	1	2	3	4	5
F. Buyer-seller relationships	1	2	3	4	5
G. Market services	1	2	3	4	5
H. Meeting customer standards	1	2	3	4	5
I. Delivery frequency	1	2	3	4	5
Other _____	1	2	3	4	5

13. Do state Departments of Agriculture marketing efforts influence your buying decisions?

Yes No

APPENDIX D: PRODUCE MARKET MANAGER SURVEY

We would like you to participate in a survey of market managers who handle produce in (State). The purpose is to gather information about produce-marketing opportunities at this location. The study is funded by the USDA. Your responses are very important and can help in the assessment of the produce-marketing system. Your responses will be kept confidential.

In order that we can contact you if there are further questions, and so we can send you a copy of our report, please give us the following:

Person Interviewed: _____ Market: _____
Phone: _____ FAX: _____ Address: _____
Email: _____ Web: _____ _____

1. What types of marketing activities take place here? (Circle all that apply)

Wholesaling Repacking Retailing Cooling

2. Do you have an advertising budget? Yes No

3. What is your fee? $_____Day $_____Week
$_____Month $_____Season

4. How many full-time workers are employed to manage the market? ____ Workers

5. How many part-time workers are employed to manage the market this summer? ____ Workers

6. What types of public support does this market receive? (Circle all that apply)

Operating cost Utility Capital expenditures/improvements

7. What are the sources of public support? (Circle)

State Department of Agriculture City County Development district Federal

8. Do you plan to start any new marketing activities in the next three years? Yes No

If yes, what are they?

_____
_____
_____
_____

9. How do you go about promoting the market?

_____
_____
_____
_____
_____
_____

10. How many growers per year use this market? _____

11. How many permanent vendors are at the market? _____

12. What types of products are sold by the vendors? (Circle all that apply)

Nursery Craft Candy Fish Meats Food court Flowers Fruit Vegetables

13. Do you have an estimate of the traffic (cars) count? Yes No

If yes, what is the count? _____ per _____

14. Do you have an estimate of the customer count? Yes No

If yes, what is the count? _____ per _____

Facility survey

Parking: paved, gravel, ground

Building: open-air, permanent

Utilities: electricity, water

Permanent booths (number and size)

Truck shed

APPENDIX E: STATE DEPARTMENT OF AGRICULTURE SURVEY

Date: _____

Interviewer: _____

Person Interviewed: _____ Phone: _____

Title: _____
Address: _____
_____
_____

1. What types of financial support do you provide for produce marketing? (Check all that apply)

_ Small grants for advertising
_ Small grants for market improvements
_ Salaries of market managers
_ Salaries of market workers
_ Subsidize utilities for state markets
_ Space for growers at below cost at farmers' markets
_ Value-added
_ Organics and third party certification

2. Has your produce marketing budget been increasing or decreasing (in current dollars) over the past 5 years?

Increasing Decreasing Explain: _____
_____
_____
_____

3. How many people in your department worked on produce marketing in 1995 and 2000?

1995 ___ 2000 ___

4. How many state-supported farmers' markets do you have? ___

5. How many staff work on produce marketing? _____

6. How are produce marketing staff assigned by location (in the state) and responsibility?

Location	Responsibility

7. For each of the produce marketing facilities (including farmers' markets) the state owns or supports, please provide information on:

Location _____
_____

Brokering _____
_____

Wholesaling _____
_____

Repacking _____
_____

Nursery (wholesale) Yes No

Nursery (retail) Yes No

Open year-round Yes No

Crafts Yes No

Percent of space allocated to retail _____%

Produce inspection Yes No

Type of parking (paved, number of spaces for trucks & cars)

Number of loading docks _____

Permanent refrigeration:

Wholesale Yes No Retail Yes No

Number of grower stalls

Permanent _____ Seasonal _____

Number of growers _____

8. For state-supported farmers' markets, what are the sources of revenues for capital improvements?

9. What post-harvest handling programs do you have?

10. What is the produce-industry background of staff members?

11. What is the scope of activity for each person on the marketing staff?

12. Tell me about the five most important/effective produce-marketing programs you have.

A.

B.

C.

D.

E.

13. What specific marketing programs do you have that put produce buyers and sellers together? (e.g., trade shows, grower association meetings, training/educational)

14. What produce certification activities do you oversee?

15. Describe the produce-market news-reporting activities you have

What do you provide?

What reporting is available?

What produce commodities are included?

16. How have you obtained professional development training for marketing? Yes No

If yes, please describe:

17. Describe any programs you have for organic produce.

18. Are additional market facilities needed in your state? Yes No

If yes, what are they?

19. How would you characterize the produce industry support from within your state for your marketing programs over the last 5 years?

20. How would you characterize the produce industry support from within your state for the publicly supported marketing facilities over the last 5 years?

21. Describe your state promotion program, including the budgeted amount for 2000. $_____

21. What specific marketing programs do you have that put produce buyers and sellers together?